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ABSTRACT

This document is the final report of the Interactive Research and Development on Teaching (IR&DT) study on the implementation of educational research in actual site locations. Two teams of teachers, researchers, and trainer/developers spent fifteen-and-one-half months implementing the IR&DT at two sites in Vermont and California. Their efforts form the basis of this report. Included are: 1) a discussion of the essential features and assumption of the IR&DT strategy: 2) a description of the strategy implementation at each research site: 3) description of the study participants: 4) discussion of the purposes and procedures of IR&DT: 5) evaluation of the study outcomes: 6) discussion of the use of IR&DT as an intervention method, with conclusions regarding the study and suggestions for future programs and research. Tabular presentation of the information resulting from this research is also presented. (LH)

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Interactive Research and Development on Teaching

INTERACTIVE RESEARCH AND DEVELOPMENT
ON TEACHING STUDY

FINAL REPORT

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APR 23 1980

PREFACE

Innovations in education that are of an enduring nature and have major impact are rare. Since its inception as a fledgling idea at the Far West Laboratory in 1975, *Interactive Research and Development on Teaching (IR&DT)* has been watched with considerable interest nationally as holding such promise. It now appears that this promise may be much nearer realization.

This Final Report of the IR&DT Study presents important findings from that study. Historically, persons charged with enacting separate pieces of the educational research-development-dissemination-implementation continuum have tended to work in isolation from one another and from the so-called practitioner who ostensibly is the recipient of the outcomes and products of their work. Perhaps unintentionally, the processes of conducting "research" and "development" became distinctly separate operations from those of facilitating "dissemination" and "implementation," thus seldom involving those individuals who were to apply the outcomes. As IR&DT has shown, this need not be so.

As with all such endeavors, the conceptualization and study of IR&DT was the product of considerable creative energy and hard work on the part of numerous people. It is my pleasure to commend them to the reader and to congratulate them for their considerable contributions.

Two teams each comprised of teachers, a researcher, and a trainer/developer spent 15-1/2 months implementing the IR&DT strategy and in the process served as subjects for the IR&DT Study. One team was located in San Diego, California, and was composed of employees of the San Diego Unified School District. The team included Cindy Chase, Jane Day, and Charlotte Lazar, teachers at Horton Elementary School, and Janice Bennett, a teacher at Erickson Elementary School;

Dave Mittleholtz, a resource teacher with the staff development office who served as trainer/developer; and Grant Behnke from the research and program evaluation office who served as researcher. In addition, Linden Courter, Director of Staff Development, provided critically important administrative support. The other team was located in Vermont. Teachers who participated were from the Underhill Independent School and School District and included Mary Calder, Irene Mayer and Nancy Pecor. The trainer/developer and researcher were Phyllis Paolucci-Whitcomb and Charles Rathbone, both members of the faculty of the College of Education and Social Services, University of Vermont. Ken Fishell, Academic Vice President, University of Vermont, served as primary site administrator. For their diligence, dedication, courage, and the contributions they have made to the educational r and d field, they are deserving of eminent praise.

A National Advisory Panel (NAP) served as external critics and advisors to both the IR&DT Study staff and the IR&DT teams. Selected to reflect the perspectives of the variety of constituencies potentially affected by outcomes of the study, members of the NAP were Walter Doyle, North Texas State University; Carolyn Evertson, R and D Center for Teacher Education, University of Texas, Austin, Texas, Del Schalock, Oregon College of Education; and Carolyn Trimble, Peralta School, Oakland Unified School District (California). Their objectivity contributed greatly to the shaping both of the IR&DT Study as it commenced and the research and development carried out by the teams. They are to be congratulated for their contribution to the effort.

IR&DT was funded by the National Institute of Education, Teaching and Learning Division. Because of the unusual nature of the IR&DT Study proposal, considerable energy was expended in specifying and clarifying the work scope. In particular, the time and efforts of several persons contributed to the project's success. Virginia Koehler, Assistant Director, Teaching and Instruction, figured prominently in the early conceptualizing of the project and provided program support in meeting federal contractual requirements as well as continued advocacy of the idea at the Institute. Esther Perry served as Program Monitor for the project and spent countless hours in collaboration with the principal investigators, solving the numerous problems an innovative project like IR&DT created. Kent Viehover provided early conceptual input to the study design. Ray Wormwood, Contracts and Grants Management Division, was instrumental in providing technical support to contract specification and negotiation. For their interest in and guidance of the project as it developed, they are deserving of much of the credit for its success.

Evaluation of the IR&DT strategy required an objective and perceptive eye. This was provided by Gary A. Griffin, Teachers College, Columbia University, initially as a Visiting Scholar in 1977-78 when he spent his sabbatical leave at the Laboratory and afterward in addition to his duties at Teachers College. His creativity in designing procedures for monitoring and analyzing data in relation to implementation of the strategy contributed significantly to the successful outcome of the study. In addition, he participated with the principal investigators in developing conclusions and recommendations and in writing the final report.

Finally, IR&DT study is the result of the initiative of Beatrice A. Ward, Deputy Laboratory Director, and William J. Tikunoff, Chairperson, Programs on Schooling, who also served as director of the project. More than anything else, their work provided a model of intellectual integrity and persistence derived from a broad knowledge of the practices of research, development, and classroom instruction. I am sure that everyone who has watched IR&DT develop from the initial idea under their care and nurturance joins me in congratulating them for contributing to the field what no doubt will be recognized as a landmark study.

Public education currently is experiencing a most crucial time in its history. Solutions must be found to problems confronting us daily, and in order to do so, procedures must be developed to engage educational personnel and relevant others in problem soultion. IR&DT provides one proven, successful way to go about conducting relevant educational r and d which at the same time attends to solving real problems. It is my sincere hope that it will be used wisely, but that we also will continue to inquire into and develop other appropriate vehicles for attacking educational problems.

John K. Hemphill
Laboratory Director

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CHAPTER ONE

INTRODUCTION

In August 1975, Ward and Tikunoff proposed that persons conducting research on teaching might profit from utilizing other research and development (r and d) strategies in addition to the linear strategy which was predominant at that time. The basis for this recommendation built from demonstrated inadequacies of the characteristics and outcomes of the linear strategy.

Within linear r and d, improvement of education, particularly improvement of educational activities and processes that occur in classrooms, is perceived as a "goods"-oriented process. Research is conducted, generally by persons knowledgeable about but usually not involved in the conduct of classroom instruction--as Corey (1953) indicated, by "professional *students* of education not by *practitioners*" (p. 3). Products applying this research likewise are developed largely by persons other than practitioners. These products then are disseminated to the practitioners, and eventually are assumed to be adopted by them and applied in the schools.

Such an approach was advocated during the period of educational reform in the 1960's (for example, see Clark and Guba, 1967) and by 1975 had become the primary mode for conducting a considerable portion of educational r and d. However, after some ten years and the expenditure of millions of dollars on r and d efforts, it was apparent that the linear r and d strategy had not been as successful as had been hoped. Ward and Tikunoff, in a 1976 paper, pointed out several strengths and weaknesses of the strategy. Using a linear approach, research on teaching had identified several ways in which teaching could be improved and had indicated that those aspects of teaching that were related to student performance most often included combinations, sequences, or chains of teaching skills and/or teacher-student interactions rather than single teaching skills or competencies. But teacher training and classroom-based teaching seldom took this information into account. Likewise, large numbers of teacher training products applying research findings had been developed (including Far West Laboratory's Minicourses). But these products were being used only by a few local education agencies and institutions of higher education. Further, since it had taken eight to ten years from the time of the original research to develop, test, and disseminate these products, those research findings that did find their way into classrooms frequently were out-of-date and/or irrelevant to the improvement of educational opportunities for teachers and learners given the societal conditions and educational expectations of the current decade.

Guba and Clark (1974), looking at educational r and d from an historical perspective, also criticized the linear approach which they had earlier advocated (see Clark and Guba, 1965). Moving from the use of r and d as a descriptor of the school improvement process to a new concept, knowledge production and utilization (KPU), they noted that:

> The inadequacies are embedded in the conceptual view of educational KPU that has been adopted, even if only implicitly, to undergird these policies [the reference is to policies for improvement-oriented change in educational practice], i.e., an engineered "systems view" of educational r and d which presupposes and/or attempts to effect a linked set of productive agencies following the R-D-D-A [research, development, dissemination, adoption] continuum to achieve a commonly agreed upon (or implicitly understood) goal of production. (p. 2).

They further suggested that such a view had ignored the goals of individual KPU practitioners and individual KPU agencies in the total educational community and, instead, had established unachievable aspirations.

In a recent restatement of the need to consider alternative strategies for conducting r and d on teaching, Tikunoff, Ward and Lazar (1979) continue to point out the difficulties associated with the linear view. Conceptualization of the teacher as a passive consumer at the end of the r and d process is seen as accounting, in part, for the failure of many educational innovations.[1] Further, separation of each r and d function (e.g., research, development, dissemination, adoption) produces constituent groups, each responsible for a separate aspect of the school improvement process and each isolated from the others. Thus, researchers talk with researchers and teachers talk with teachers, but they seldom talk with each other. In r and d on teaching, this imposed separation, reinforced by increased specialization within each r and d area, escalates the feeling of isolation reported by teachers who merely are asked to *adopt* and *use* r and d outcomes rather than be involved in the process of school improvement from the inception of an r and d effort. As a result, Tikunoff, Ward and Lazar contend that teachers frequently are given answers to questions they never asked or problems they consider less than critical. In addition, when "required" to apply research findings in their classrooms, teachers find language common to the specialized r and d communities to be largely unfamiliar and uninterpretable.[2]

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1. The assertion of such concerns is not new. For example, advocates of action research (e.g., see Corey, 1949, 1952, 1953; Wann, 1952; Wrightstone, 1949; Chun, Cook, and Harding, 1948) and cooperative studies (e.g., see Herrick, 1948) stated similar concerns as the rationale for moving to alternative r and d strategies. Similarities and differences among these strategies and the alternative r and d on teaching strategy presented in this report are discussed later in this chapter.
2. The word "required" is placed within quotation marks because research on adoption, adaptation, and utilization of educational innovations suggests teachers employ a high degree of independence in determining whether they will, in fact, apply new knowledge, new processes, etc.

Interactive Research and Development

As an alternative to the linear r and d strategy, *Interactive Research and Development on Teaching* (IR&DT) was proposed (see Ward and Tikunoff, 1976). This title was selected purposefully to give prominence to the undergirding principles of the strategy. IR&DT places teachers, researchers, and trainer/developers together to inquire *as a team*, beginning with the initiation of the r and d process, into those questions, problems and concerns of *classroom teachers*. An IR&DT team is charged with conducting research and *concurrently* developing training based on *both* their research *findings* and the research *methods* and *procedures* employed in their study. Decisions are made *collaboratively*. For IR&DT, this means that each member of the team has *parity* and shares *equal responsibility* for the team's decisions and actions, from identification of a question/problem through completion of all resultant r and d activities.

Subsequently, the National Institute of Education, Division of Teaching, funded an investigation of IR&DT in order:

- to determine whether such an r and d strategy would, in fact, resolve problems of the sort outlined briefly above (and discussed in more detail later in this chapter) thus warranting further use; and
- to specify more precisely the essential requirements and characteristics that predict successful use of such a strategy.

To investigate these questions, a multi-faceted study was undertaken. IR&DT was implemented at two sites. These implementations, which occurred over a 15 1/2 month period from mid-August 1977 through November 1978, were studied in order to be able to describe and/or analyze each in terms of five aspects: (1) the persons involved; (2) the roles, responsibilities, and activities undertaken by each participant, i.e., the interactiveness of the implementation; (3) the effects of involvement in IR&DT on the participants and their respective institutions; (4) the rigor and/or usefulness both of the research findings and of the training strategies produced by each team; and (5) the technical assistance and other types of support requested and/or required.

This document presents the results of this study.[3] It includes:

Chapter One--An introduction to and overview of IR&DT. In addition to the above discussion, this chapter provides: (a) a discussion of those conditions that must exist for an r and d process to be considered *interactive*, and (b) the assumptions upon which IR&DT is based, including the research background from which IR&DT builds.

Chapter Two--This chapter presents the purposes and procedures of the study. It outlines the study questions and the procedures utilized to gather information necessary to answer these questions.

Chapter Three--This chapter describes the persons and institutional settings involved in the study.

Chapter Four--This chapter presents findings regarding the implementation process at each site. Among the sources that form the data base are tape recordings of every team meeting conducted during the 15 1/2 months; pre and post interviews with participants and others with whom they interact; on-site observations of team meetings and in teachers' classrooms; participant logs and journals; and participant questionnaires. Findings are reported relative to parity of team members, nature of interactions among team members relative to

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3. The r and d products resulting from the work of the IR&DT teams are reported elsewhere in seven separate volumes from the San Diego team (Evolution of the Study, Formal Research Report, Four Teacher Case Studies and a Formal Training Report) and three separate volumes from the Vermont team (Formal Research Report, Nine Teacher Case Studies, and a Formal Training Report). Appendices A and B provide abstracts of the r and d efforts at each site.

various r and d steps and processes and role contributions of team members.

Chapter Five--This chapter presents data regarding the r and d outcomes of the IR&DT teams by reporting three independent judgment procedures. First, juries composed of various IR&DT constituents (i.e., teachers, researchers, teacher educators, staff development persons) generated criteria and judged the research and training reports from each site in regard either to (a) the rigor with which the research and training were conducted; (b) the contribution of the research to theory building regarding teaching; or (c) the usefulness of both the research and training outcomes to other teachers, researchers, and trainer/developers. Second, experts representing similar constituents rated the outcomes by responding to predetermined criteria for rigor and usefulness. Finally, "like" and "unlike" role constituents at each site judged the research and training outcomes for the individual site only, using the same predetermined criteria employed by the experts. These judgments are reported in this chapter as a means of assessing the potential contribution(s) of IR&DT to r and d on teaching compared with what these individuals know about the contributions of r and d on teaching in general.

Chapter Six--This chapter presents the IR&DT intervention outcomes. As will be discussed later, it is anticipated that participation in IR&DT will result in changes in the people and institutions that are involved. Data are reported regarding the effects of participation in IR&DT upon team members, relevant other persons at the sites, and their respective institutions.

Chapter Seven--This chapter presents a discussion of the findings. In doing so, it brings together the implementation and outcome data to delineate the requirements for successful IR&DT, to suggest the potential contributions of the IR&DT strategy to the improvement of teaching and learning as they occur in the classroom, and to recommend potential policy implications for funding agencies (such as the National Institute of Education) if IR&DT is to be considered as one alternative strategy for carrying out *some* portion of future r and d efforts.

In presenting this report of the IR&DT Study, the authors wish to underline that they do not consider IR&DT to be the *only* viable strategy for conducting r and d on teaching or on other aspects of schooling. As noted above, the purpose of this study was to determine whether IR&DT as an alternative r and d strategy would contribute significantly both to knowledge about classroom practices and to ways to inquire into these; and, if successful, to establish the people and site characteristics, the role characteristics, and the support elements necessary for productive IR&DT.

The discussion that follows provides the background information necessary to understand IR&DT. Two important facets are explored. First, the essential features of IR&DT are presented. Then, the assumptions which underly IR&DT are delineated. Both are integral to interpreting the findings of the IR&DT study presented in Chapters Four, Five, and Six.

Essential Features of IR&DT

The brief overview of IR&DT presented above outlined the three most apparent features of the strategy--involvement of a team composed of teacher, researcher, trainer/developer; parity in all decision-making; and concurrent conduct of research and development activities. In all, however, six major features must be present for an r and d effort to be judged *interactive.* While certain of the features may exist in a more, or less, ideal form, *all* must be manifest in some way. Combining the aforementioned elements, they include: (1) r and d team composition, (2) the nature of collaboration, (3) problem-solving focus, (4) conducting concurrent r and d, (5) maintaining the integrity of the classroom and (6) recognition of the strategy as an intervention, as well as an r and d process.

R and D Team Composition

Inasmuch as the IR&DT strategy originally was proposed as an alternative approach to conducting r and d on teaching, the team composition builds from this focus. Thus, the team *minimally* must be composed of *a teacher, a researcher,* and *a trainer/developer*.

In using these labels, the emphasis is upon role functions rather than particular people. *Teacher* refers to the *practitioner* who is responsible for the day-to-day conduct of the schooling process. In research on teaching, this is one who is responsible for the day-to-day teaching and learning activities that occur in a classroom at the elementary or secondary school level. *Researcher* refers to that practitioner whose major day-to-day responsibilities are to inquire systematically into the teaching and learning process in order to ask questions, to gain new knowledge, and/or to resolve problems, whether based in a school district, at a university, or in an educational research agency. By *trainer/developer* we mean that practitioner who is responsible for designing and providing one of three experiences for teachers--preservice training of teachers, professional development opportunities for teachers-in-service, or technical assistance at the classroom level.

Persons representing each of these constituencies bring unique skills and perspectives to IR&DT. These are outlined in Figure I.1. Briefly, the teacher brings knowledge and skill related to classroom-based teaching and learning. The researcher brings knowledge and skill in scientific processes and multiple, alternative modes of conducting inquiry. The trainer/developer brings skill in design and use of training (instructional) programs for adults. Such a team

Figure I.1

Contributions to IR&DT of Team Participants

Participant	Contribution
TEACHER	Knowledge and skill in teaching (and learning) within the complex setting of the classroom, thus better assuring validity of the research question. Control of teaching and learning within the classroom setting. Awareness of the effect(s) particular r and d procedures may have upon the classroom, thereby providing validity assurance.
RESEARCHER	Knowledge and skill in scientific inquiry (Note: by this is implied more than technical research skills.) Knowledge and skill in utilizing multiple research paradigms in order to approach best the problem under investigation and attend to the context in which the r and d effort will be conducted. Knowledge and skill in applying multiple research methods, e.g., qualitative as well as quantitative methods. Broad knowledge regarding already available information about teaching and learning.
TRAINER	Knowledge and skill in transferring/applying both research outcomes and methods in training programs. Knowledge and skill in adapting outcomes from one setting for use in another e.g., dissemination strategies. Knowledge and skill in developing training processes and products. Broad knowledge of already existing training processes and products.

composition assumes that full use will be made of the unique skills and perspectives of each team member. Thus, the research process is not the unique domain of the researcher, nor is development of training for other teachers the unique domain of the trainer/developer. Teachers, too, are seen as contributing important and unique insights and skills to the total r and d process from inception of the question to utilization of outcomes. The extent to which the unique contributions of each team member are recognized and used is an important determinant of the extent to which IR&DT is operative.

The Nature of Collaboration

Given that teachers, researchers, and trainer/developers are assumed to bring unique contributions to r and d on teaching, it follows that decisions regarding research questions, data collection procedures, materials development, etc., should emerge as a collaborative effort.

Within IR&DT, collaboration is viewed as teachers, researchers, and trainer developers both *working with parity* and *assuming equal responsibility* to identify, inquire into, and resolve the problems/concerns of classroom teachers.[4] Such collaboration recognizes and utilizes the unique insights and skills provided by each participant while, at the same time, demanding that no set of capabilities is assigned a superior status. It assumes a *work with* rather than a *work on* posture--the latter, in the opinion of the authors, being more frequently the *modus operandi* when teachers are asked to join researchers or trainer/developers in a linear r and d endeavor.[5]

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[4] As noted previously, in its present form IR&DT focuses upon teaching and, thus, teachers' problems and concerns. If the r and d focus were on some other aspect of the schooling process, the practitioner member might change. For example, if the team were concerned with the functions and contributions of the school principal, the appropriate practitioner might include both teachers and school principals.

[5] *Worked on* and *worked with* are borrowed from Blumberg and Schmuck, 1972, pp. 43-47.

Given these requirements, parity is *granted* when team members agree to participate in IR&DT. Persons agree that no single individual may impose the problem to be solved and/or the question to be answered. Likewise, research methods, data collection procedures, data analyses and data reporting, training procedures and processes, etc., reflect, capitalize on, and involve the perspective(s) of all participants.

On the other hand, equal sharing of responsibility is achieved only when each team member *assumes* his or her share based on his or her unique ability to contribute and willingness to participate equally.

Within such a collaborative effort, a willingness and readiness to assist with the activities of other participant roles should emerge. While this does not mean that a teacher must become an expert in research, or vice versa, it implies that each participant will experience and acquire some of the skills and insights of the other participants as he or she works with them to conduct the r and d. Further, procedures should be adjusted to attend to each participant's concerns, interests, insights, knowledge, and skills. Leadership should emerge as participants work together. The researcher should not be presumed automatically to be the leader of the r and d effort.

Thus, it is evident that the highest degree of interactiveness is achieved when participants recognize, accept, and learn to trust and use each others' talents and insights. IR&DT is least attainable when one or more participants is perceived by other participants to be more, or less, knowledgeable or qualified. If this occurs, the "more" qualified may assume or be given full authority and/or responsibility, thereby negating the collaborative requirements of IR&DT. It is important to note that collaboration as defined in IR&DT is in direct contrast to the approach usually taken in a linear r and d strategy. Whether intentional or not, the linear separation of the r and d functions infers that knowledge flows from the researcher to the trainer/developer to the disseminator to the implementor (teacher). It establishes an information and status hierarchy in which the researcher is deemed to be the most scientific and, therefore, the most qualified; at the bottom is the teacher, who knows best how *to implement* but need not and should not be concerned about what and how r and d is conducted.

Elimination of such expectations and perceptions is a necessary contingency of IR&DT. Because of this requirement, and because past experience suggests that teachers might be overpowered in both discussion and action if the researcher or trainer/developer were assumed to have higher status, multiple teachers were included on both teams in the IR&DT Study but each team had only one researcher and one trainer/developer.[6]

The *interactiveness* of an IR&DT effort, then, is determined in part by the requirement of collaboration. Both the degree to which IR&DT team members, regardless of professional role, are able to command the attention of the team at each step of an r and d process (parity), and the extent to which team members offer successfully their unique perspectives, knowledge, and skill and engage collaboratively in the accomplishment of the various tasks undertaken by the team (assume responsibility) must be present.

Problem-Solving Focus

Educational r and d has many functions, e.g., to describe the schooling process as it is enacted at a given place and a given point in time; to generate new knowledge about some aspect of schooling, such as teaching; to delineate operating problems in schools and to identify and test solutions to these problems. All these functions, plus multiple other possibilities, are important to improvement oriented change in education.[7] However, as earlier indicated, one function to which educational r and d gives little attention is engagement of teachers in solving classroom problems which they perceive to be important. It is this function on which IR&DT is focused.

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[6] The inclusion of multiple teachers also increased the variety of teaching perspectives from which the team could draw.

Thus, in contrast to research settings in which the problem to be studied is predetermined by the researcher (or even more remotely, by some funding agent), in IR&DT the problems must emerge from the mutual concerns and inquiries of the team and, above all, must attend to the teacher's problems. From the perspective of the teacher, there are innumerable classroom-based problems that best could be alleviated and/or resolved through a concerted problem-solving effort, providing a major task for educational r and d. In IR&DT, the problem to be researched builds naturally from these concerns.

The power of this requirement is revealed in a national study of federal programs supporting educational change (see Berman, McLaughlin, et al., 1975 and 1977). When a high priority need was recognized by teachers and a commitment to finding and utilizing a feasible and acceptable solution was present, commitment to a particular project was high and attempts to implement the necessary changes were carried out and continued over time. Teachers felt the r and d effort was efficacious and useful. This was not true when projects were planned and conducted merely in response to the guidelines that accompanied the federal dollars.[8]

It is interesting to note that *action research*, a movement of the 1940s and early 1950s, emphasized similar concerns. Central to action research was attention to problems that were considered valid and important by practitioners and to solutions that had promise for improving practice (for example, see discussion by Corey, 1949, and 1953, Chapter One). Another integral concern was taking *practical,* research-based actions in order to do something about the problem being studied. An important question to ask regarding IR&DT, therefore, is whether similar goals can be achieved via a configuration of participants that differs from the typical action research group and an r and d approach that stresses research as compared with curriculum development which was action research's primary focus (see later discussion in this chapter). This question, in turn, raises issues of the validity and generalizability of the problems that are generated, studied, resolved, and reported in the manner proposed under IR&DT, a topic to be discussed later in this chapter.

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[7] The term, "improvement oriented change in education," is taken from Guba and Clark (1974); for example, see page 39.

[8] For further discussion of this topic, see Emrick and Peterson, 1978.

Conducting Concurrent R and D

So far in this discussion, requirements relative to the contributions and functions of participants, the nature of the interactive process, and the focus of IR&DT on inquiry into problems and questions about the classroom instructional process have been presented. It is also important to bear in mind that an IR&DT team is charged with focusing concurrently on research and development of training for other teachers. Thus, it is to *produce a piece of research,* i.e., identify a problem, select an appropriate research methodology, select and/or develop and employ appropriate data collection and analysis procedures, and interpret and report findings. At the same time, inclusion of a trainer/developer on the team introduces the capability for *concurrent* attention to and development of training procedures and processes that grow out of the IR&DT effort.

By attending to development concerns from the beginning of an r and d effort, in addition to applying research findings in a training program, it is possible to employ the procedures utilized to identify the problem under investigation and the data collection and analysis procedures from the research as training vehicles as well. For instance, in the process of arriving at a single problem to be investigated, an IR&DT team no doubt will explore several concerns. Each will have to be addressed with the questions: "Is it a problem? If so, can it be resolved?" In order to answer these questions, members of the team most likely will begin with inquiry in the classroom itself. Each teacher on the team may inquire into his or her own behavior and his or her students' behavior in relation to the various problems suggested. The researcher and trainer/developer may observe the same phenomena at the same time in the teacher's classroom or in other classrooms. Such a process, in itself, can serve as a means for training other teachers to identify and delimit problems of a classroom instructional nature. Likewise, application of data collection and analysis techniques used in the research effort may be directly applicable as training mechanisms.

When such possibilities are recognized, development need not await the completion of the entire research process. Training programs can be developed that build others' capabilities to inquire in their own classrooms into the same aspects of teaching and learning as are being studied concurrently by the IR&DT team. For instance, because the IR&DT trainer/developer assumes responsibility for training the team's data collectors, much can be learned regarding the data collection processes that, in turn, can serve as training for teachers and others. Such training can focus immediately on this purpose, and incorporate the research findings later once they are available.[9] As a result, at the same time the research findings are reported, training strategies are already developed that utilize *both* the techniques devised to study and resolve the specified problem during the research portion of the effort *and* the research findings.

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[9] Based on the IR&DT Study, it appears that teachers are most receptive to discussion and use of research findings after they have studied their own classrooms and know how their situations compare with those reported in the study. This involves determining the presence, absence, occurrence of, and relationships among the dependent and independent variables of interest in the research as they occur in each teacher's classroom prior to presenting the research data.

To accomplish these ends, research and development must be conducted as concurrent processes with both new knowledge production and the methods and procedures used to obtain this knowledge receiving equal attention throughout the r and d effort. While it is recognized that the other essential features of IR&DT could exist and still have research and development carried out in a linear, as opposed to a concurrent, fashion, a highly *interactive* r and d strategy emphasizes continuous concurrent attention to these activities. It is this facet of IR&DT that facilitates a reduction in the time lag from research to general use by practitioners.

Maintaining the Integrity of the Classroom

All of the above mentioned features of IR&DT are intended to incorporate a high concern for what goes on in classrooms. Hence, it is only natural for this approach to educational r and d to be sensitive both to the complexity of classroom settings and to the extent to which r and d may interfere with these settings. Inclusion of at least one teacher (and more likely two or more teachers) on an IR&DT team should highlight these sensitivities and cause the researcher and trainer/developer to select and use data sources, data collection procedures, training procedures, etc., that do not intrude upon the naturalness of the everyday settings in which teaching and learning occur.

Attention to the complexity of the classroom is considered an essential feature of IR&DT because research that has not included the teacher's participation in this way has been particularly vulnerable to overlooking how complicated classroom-based teaching and learning are. Several noted researchers support this assertion. For example, Goodlad (1979) recently stated:

> Too many researchers are preoccupied with research on single instructional variables that rarely account for more than 5% of the variance in student outcomes. Too few study the complex phenomena of schooling in their natural environment, developing the needed new methodologies instead of seeking to adapt the old. (p. 347)

From another perspective, Kounin (1977) charged that:

> Researchers have long stressed objectivity (the truth part of evidence), but have done very little about the other aspect of evidence (the whole truth). We have coefficients of reliability but no coefficients of completeness...completeness refers to the degree to which the data include everything that the occupants of a particular setting are doing, as well as the manner and sequence in which they are doing them. (pp.4-5)

Doyle (1977a) delineated some of the complexities that should be considered including multidimensionality, simultaneity, and unpredictability. As he explained:

> Classrooms are multidimensional in the sense that they serve a variety of purposes and contain a variety of events and processes, not all of which are necessarily related or even compatible. Although the rhetoric of teacher training often speaks of the teacher, and the student, this idealized dyad seldom exists in a pure form in the natural setting. Classrooms are crowded not only in the sense that they contain a large number of people. They also enclose a large number of activities and purposes...In addition to the quantity of dimensions in classroom settings, many of the events occur simultaneously... The simultaneous occurrence of multiple dimensions, together with the continuous possibility of internal and external interruptions, contributes to an unpredictability in the sequence of classroom events. (pp. 9-11)

Such a view of classrooms also has been stated by Jackson (1968) and Smith and Geoffrey (1968), among others.

To attend to such complexities, it is anticipated that an IR&DT team will use multiple data sources and incorporate multiple perspectives in their research and training efforts. In particular, IR&DT offers an opportunity for the teacher to serve as a *participant* observer, providing an *inside* view of all that occurs, while some other individual serves as a *nonparticipant* observer, describing the data base from an *outside* perspective.[10] In addition, it is anticipated that both quantitative data, e.g., counting of the occurrence of specific events based on a coding system, and qualitative data, e.g., narrative descriptions of the sequence of events that occur in a classroom, may be used.

The challenge, then, is to study:

> real life settings
> populated by real
> people in real
> people roles
> (Kounin, 1977, p. 4)

without so modifying the situation that the setting, people, interactions, etc., are changed and become unnatural. Obviously, to conduct research in a *natural* setting, one must utilize research strategies that can be accommodated in the ongoing classroom and school environment. Any modifications of this environment that are introduced should be investigated carefully to determine the extent to which critical *natural* variables have been modified or removed.

Tunnel (1977) recommends that three dimensions of the setting should be considered. These include natural behavior, natural setting, and natural treatment. Natural behavior is behavior that "is part of the person's existing response repertoire" (p. 426). It is not established or maintained solely or primarily for the purpose of the research. A natural setting is that in which "people regularly find themselves" (p. 427). It likewise is not established solely for the research effort. A natural treatment is "natural in that the subject would have experienced it with or without the presence of the researchers" (p. 428). In reviewing the benefits of research that capitalizes

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10. Smith and Geoffrey (1968) used similar terms to describe their perspectives in investigating the complexities of the urban classroom. Smith was the researcher, and Geoffrey the teacher.

upon these natural dimensions, Tunnel suggests:

> If the response they [in the case of IR&DT, the teacher and his or her students] make is natural and occurs in a reasonably natural setting (and if possible, in response to a natural event), the line separating research and the real world tends to become erased. Three-dimensional naturalistic studies simply exert far greater impact on research participants. (p. 433)

Given the parity in decision-making that is an essential feature of IR&DT, it is presumed that teachers, researchers, and trainer/developers working together will design and conduct research and training efforts that both attend to the complexities of the classroom and maintain a natural teaching and learning situation. The achievement of these goals should be aided by the insights and sensitivities of the teachers on the IR&DT team. For example, teachers should try out whatever data collection and training procedures are proposed to determine whether they are workable in an onging teaching-learning situation without undue interference with the natural flow of classroom events. Further, when the teachers on the team also participate as subjects in the research study, capability is increased to include data from multiple perspectives and yet not alter or change the classroom setting.

Thus, IR&DT, by its very nature--its participants, the collaborative expectations imposed upon them, and the real world requirements of a problem solving focus--is designed to attend and respond to the complexity and integrity of the classroom. To the extent that a team fails to do this, an important feature of IR&DT has been disregarded.

IR&DT As An Intervention Strategy

The basic operating principles outlined above describe IR&DT as an alternative r and d strategy. However, the power of IR&DT as an intervention needs to be explored as well. While leaving the underlying teacher, researcher, and trainer/developer roles as intact as possible, the strategy proposes certain alterations in the conventional functions of those individuals. For example, IR&DT's focus on problem-solving advocates and makes use of each participant's unique skills and insights while presenting a forum in which new skills and insights can be developed. Through involvement in all types of research decision-making--from identification of the problem, through selection of a research design and data collection strategies, selection of data analysis procedures, participation in data analysis, and writing of research reports--teachers may acquire new mind sets geared toward inquiry into their own ongoing teaching-learning concerns. And they will have had practical experience with r and d tools that can be used to investigate and resolve these concerns.

The researcher and the trainer/developer also may develop new skills. For the researcher, involvement *with* teachers in the inquiry process may reveal powerful research strategies, point out critical research issues that he or she had not previously considered, and gain him or her a credibility with teachers in general that will be an invaluable future resource. The trainer/developer may acquire new skill and insights into the importance of and ways to build staff development agendas that emerge from teachers' concerns rather than school district administration and/or university or college faculty interests. He or she also may develop skill in training teachers to build observation and data analysis strategies that are relevant to their own concerns and that can be applied in their own classrooms. Such possibilities lend credence to the capacity for IR&DT to be a promising and viable professional development vehicle in addition to providing an alternative r and d strategy.

IR&DT further proposes that instructional settings--e.g., the classroom, the school, the school district, and the institution of higher education--

accommodate to the mutual and individual interests and concerns of the participants and to the modifications in teaching, learning, and teacher training that may result. Ultimately, the strategy proposes to make the schooling experience somehow *better* for teachers and students from the point of view of encouraging collaborative, rigorous, classroom-based research.

Given this feature of IR&DT, it becomes apparent that the complexity of variables to be affected by the strategy include, among others, the nature of classroom teaching, the school and classroom as work places, the methodologies of educational research, the socialization of persons in terms of professional role definitions and expectations, and the ways educational institutions function.

Properly carried out, IR&DT meets several requirements for improvement of schools identified in a study of the Institute for Development of Educational Activities, Inc., League of Cooperating Schools as reported by Goodlad (1977):

> [I]t became strikingly clear that, to make any difference to what happens in the school-based learning of students, all the projects, research, work of specialists in state and local offices of education, and so on, ultimately must come to roost within the finite dimensions of a school day, week, or year...[W]ith help and guidance from an informed, caring outside resource, school staffs can become extraordinarily aware of what is required to improve and discriminately selective in what they reach out for and bring into the school...[T]he incentive to make fundamental changes seems to require awareness of pronounced discrepancies between existing programs and rather clear alternatives...[S]eriously attempting to do something about such discrepancies requires legitimization by a supportive surrounding intrastructure. (p. 5)

Recognizing, capitalizing upon, and utilizing IR&DT as an intervention strategy and, at the same time, conducting and reporting rigorous and useful research and training efforts, makes the strategy a particularly enticing alternative. In an ideal enactment, IR&DT has the potential to make significant contributions (in terms of both relevance and elegance of procedure, process, and results) to affecting improvement in schools.

Assumptions Underlying IR&DT

New approaches in education--whether they be new teaching or learning strategies, new curricular materials, new modes of school organization--are generated by and build from a variety of perspectives. The beliefs of educators influence what occurs for, as Clifford (1973) indicated in a historical review of the impact of research on teaching, r and d that contradicts personal and group opinion wins neither notice nor acceptance. These beliefs may or may not have a scientific basis but they nonetheless have a powerful influence on what r and d outcomes get used.

For instance, several general beliefs appear to support the need for educational r and d. The most fundamental of these is that a changing society predicts changes both in the students whom education serves and in the social context in which education operates. In order to respond to these changes, r and d is necessary. A second belief is that r and d can provide answers to questions, provide solutions to problems that occur within the school context and perhaps within the larger society, and produce results (improvements) that can be used in classrooms. Another belief assumes that r and d can be carried out sysematically and that the elements of the teaching-learning process and the schooling context can be controlled so that *experiments* can be conducted. Thus, proceeding from scientific inquiry to application of findings in an orderly manner that builds causal relationships and predictable results is assumed to be possible. Finally, r and d is considered to result in important and useful knowledge about teaching and learning and thus provide a vast array of useful products, processes, and procedures which can be used by teachers. The *problem* is to get both the knowledge and the products into use in the classroom.

Four major assumptions form the foundation for the IR&DT strategy and for the study that was conducted. While most of these assumptions build on the general beliefs stated above, they also incorporate knowledge gleaned from the experiences of those involved in educational r and d, both recently and over the past several decades. A discussion of each assumption follows including a review of the current and historical knowledge base considered to be most pertinent to the explication of each.

Assumption 1: Participative R and D Strategies Which Include Teachers Are Needed

The first assumption upon which IR&DT builds is that full participation of teachers in the *entire* r and d process will better insure that outcomes are more valid, relevant and useful. To accomplish this necessitates developing alternative strategies in which teachers, researchers, and trainer/developers collaborate to conduct educational r and d. Such procedures suggest a radical departure from the linear strategy prevalent in educational r and d. However, there is a growing body of criticism in the literature to cite this as a critical need.

At the beginning of this chapter, certain characteristics of the linear r and d approach were presented. House (1975) serves briefly to restate the distinctive attributes of this approach in relation to knowledge building and school improvement:

> For the past ten years, since the advent of large-scale federal money, the dominate policy of the federal government has been the research, development, diffusion approach to educational change. In this view, researchers produce research knowledge, which developers convert into usable products, which are then diffused throughout the educational community by dissemination experts and finally adopted by local schools. Thus is education improved. (p. 1)

House goes on to state:

> The sequence of activities is desirable from the point of view of those who will control and benefit from the flow of innovation but not necessarily from anyone else's. The division of labor is roughly that of those who do and those who are done to. The planning group gets to initiate activities, decide what problems will be addressed, and how resources will be allocated, while consumers are assigned the difficult and thankless task of implementing. Initiation, control, and rewards reside at the top. The scheme may lie horizontally on paper, but make no mistakes, it is a vertical system. (p. 2)

Sole reliance upon this linear approach to educational improvement has resulted in a growing dissatisfaction reflected in several criticisms. In addition to those above, two that are voiced frequently include the difference in status inferred by personnel separation, and the time required to put improvements into operation in the day-to-day life of schooling. Krathwohl (1974) speaks to both:

> It tends to divide the profession into thinkers and doers, a concern long expressed by practitioners about staffs of schools and colleges of education. It is no doubt further emphasized by the personalities of those staff members attracted by the scientific model into educational research training programs. They contrast particularly with those attracted to education as humanistically oriented personalities seeking to serve human needs. The gap is also a function of the development process, which involves scholars and scientists in the discovery and validation of findings at the beginning of the process and at the other end involves teachers and users in dissemination and adoption. With the researcher primarily involved at the beginning and the practitioner at the end of the developmental process, the role of the researcher is removed from and in large measure concealed from the consumer...Another characteristic of the linear development model that contributes to the researcher-user gap is that it takes a long period of time from beginning to end if each step waits for the previous one to be completed... Thus we can see that one of the causes of the perception of lack of impact of educational research is the gap between researcher and research user which keeps the latter ignorant of what the researcher is doing and which in some instances causes the user to distrust the

> researcher as really having his interests at heart. The gap is, in part at least, a result of the inherent nature of the models of research and development that we have chosen to use. (pp. 77-79)

Goodlad (1979) presents an even stronger view:

> The prevailing theories of change that take as their model factories and assembly lines simply do not fit the realities of schooling...All are part of a theory of rationality that calls for the precise delineation of goals to be accomplished, the use of goals to justify means, and the measurement of previously designed goals. Applied to the improvement of schooling, the model usually assumes an institution is capable of improving itself, an institution not with differing goals, but with inadequately defined goals. The model also assumes more intelligence outside of schools than in them, and a relatively impotent, passive target group of personnel. (p. 345)

Concerns such as these provide sufficient grounds for exploring alternative r and d strategies. Regardless of the high quality knowledge, products, etc., that may be produced, the divisiveness among members of the profession and the distrust that results from almost sole use of a linear r and d strategy cannot be neglected.

In addition, several recent studies focusing on the failure of attempts to improve education raise doubts regarding the efficacy of linear r and d. For example, in reporting the study of the League of Cooperating Schools, Goodlad and Klein, et al. (1974) suggested that little was changed.

> A very subjective, but nonetheless general impression of those who gathered and those who studied the data was that some of the highly recommended and publicized innovations of the past decade or so were dimly conceived and at best, partially implemented in the schools claiming them. The novel features seemed to be blunted in the effort to twist the innovation into familiar conceptual frames or established patterns of schooling. For example, team teaching, more often than not was some pattern of departmentalization and nongrading looked to be a form of homogeneous grouping. Similarly the new content of curriculum projects tended to be conveyed with the baggage of traditional technology. (p. 72)

As a background statement for a four year, two phase study of a national sample of educational innovations funded by federal programs, Berman and McLaughlin (1978) indicated:

> Federal financial aid now makes up an important fraction of many local school district budgets, but its effectiveness in improving local educational practices is uncertain. Federally sponsored evaluations reveal inconsistent and generally disappointing results, and despite considerable innovative activity on the part of local school districts, the evidence suggests that:
>
> - No class of existing educational treatments has been found that consistently leads to improved student outcomes (when variations in the institutional setting and nonschool factors are taken into account).
> - "Successful" projects have difficulty sustaining their success over a number of years.
> - "Successful" projects are not disseminated automatically or easily, and their "replication" in new sites usually falls short of their performance in the original sites. (p. v)

These findings clearly are supported in other research. For instance, Doyle (1977b) in a review of three paradigms used in teacher effectiveness research suggested that research on teaching had identified few relationships between teacher variables and effectiveness criteria. House, Glass, McLean, and Walker (1977) in a critique of the "Follow Through" evaluation asserted that participation in classes in which one of the thirteen models of this innovation were used "was not shown to be either superior or inferior to schooling normally provided by schools" (p. 1). On the other hand, the peculiarities of individual teachers, schools, neighborhoods, and homes did influence students' achievement "far more than what is captured by labels such as 'basic skills' or 'affective education'" (p. 2). As noted by Gage (1978) "such discouraging characterizations of previous findings go back at least 25 years (see, for example, a report of the Committee on the Criteria of Teacher Effectiveness 1952)" (p. 228).

The writings of persons associated with the Teachers College, Columbia University, Horace-Mann Lincoln Institute of School Experimentation action research movement in the late 1940's and early 1950's also made similar charges. Corey (1949) discussed "the problem of increasing the influence of research findings on educational practices" (p. 509), and called attention to "the fact that there is available in hundreds of libraries and thousands of books and articles a tremendous amount of information about education derived from research [but] even the teachers who hear about or read these reports are in most instances but slightly influenced by them" (p. 511). Corey (1952) further alleged that "a great deal of educational research is conducted by investigators who feel no responsibility for the application of their findings to the solution of practical problems" (p. 478).

A variety of responses may be made to both the current and historical accusations listed above. One response is to demonstrate that in some specific instances r and d has resulted in changes and improvements in education. Such data are contained in the previously referenced writings (such as Gage, 1978; Berman and McLaughlin, 1978; Goodlad, Klein & Associates, 1974) and in other documents such as Education Programs that Work (1978). Another response is to identify those dissemination, diffusion, adoption, and adaptation strategies that *work*, i.e., those strategies that lead to installation and long-term use of r and d outcomes by practitioners. In large measure, this latter response was the movation behind the Berman, et al. work from 1973-1977; Hall's work on the Concerns-Based Adoption Model (see Hall and Loucks, 1978); the Sieber, Louis and Metzer (1972) study of the use of educational knowledge; the Emrick, et al. (1977) study of the National Diffusion Network; the Moore, et al. (1977) study of factors that facilitate educational change; and the Hood and Cates

(1978) look at alternative approaches to analyzing dissemination and linkage roles and functions.

A third response to the criticisms of educational r and d outcomes is to consider the design and methodology errors that may have contributed to the inappropriateness or irrelevance of various outcomes and correct such errors in future efforts. The House, et al. (1977) critique of the "Follow Through" evaluation generally follows this tack as does a critique by Brophy (1974) and a review by Cronbach (1975) of several areas of educational psychology from the research design perspective. None of these responses requests changes in the approach to r and d. Refinement and improvements in the existing strategy are recommended instead.

A fourth direction is to indicate that alternative r and d strategies are needed. Ward and Tikunoff (1976), in proposing IR&DT, were not alone in pursuing this response. Clark and Guba (1974), Wilson (1974), House (1975), Doyle (1977b) and Goodlad (1979) are among those who only recently advanced alternatives. During an earlier period, Lewin (1948), Campbell (1937), Mort (1945), Herrick (1948) and Corey (see 1953 reference as an example) also proposed and tested r and d alternatives. Common circumstances and themes run through all these alternatives. Each was proposed at a time when educational r and d was under attack for failing to be useful. Most consider practitioners to be vital participants in the *entire* r and d process. Clark (1976), for example, stated:

> The process of inquiry will have to be brought closer to the point of effective action in education, i.e., will involve the direct participation of practitioner agencies in all the process of educational R and D. (p. 7)

Krathwohl (1974) suggested we may wish "to try alternative models of development which rely more heavily on teacher involvement" (p. 84). McLaughlin and Marsh (1978) stated that "the instrumental value of involving classroom teachers in identifying problems and solutions is clearly expressed in the Rand Study" (p. 87). Elliott (1977) supported inter-collaboration in the educational r and d conducted in Great Britain. From the earlier decade, Cheir, Cook, and Harding (1948) noted that in *participant* action research "the central idea is that the people who are to take action also must be involved in the research process from the very beginning" (p. 46).

To summarize, IR&DT builds on the assumption that alternative approaches to educational r and d that emphasize collaborative relationships among teachers (practitioners) and researchers and trainer/developers are needed if research outcomes are to be perceived as relevant and useful by practitioners and changes (improvements) in schooling are actually to occur. This view has a long-standing history in education. The study of IR&DT reported herein contributes important data for understanding and building more productive r and d efforts.

Assumption 2: IR&DT Will Contribute to Educational Knowledge and Theory Building

A commonly agreed upon purpose of research irrespective of the field in which it is conducted is to contribute new knowledge to the area of inquiry. For example, in a Presidential address to the American Education Research Association, Kerlinger (1977) indicated that "the basic purpose of scientific research is theory. This rather enigmatic statement means that the purpose of scientific research is to understand and explain phenomena" (p. 5). He went on to note that "a theory presents a systematic view of phenomena by specifying relations among variables with the purpose of explaining and predicting the phenomena" (p. 5). Looking more specifically at classroom process research, Koehler (1978) suggested that one purpose of research is to understand classroom processes. Doyle (1977c) stated that "a need clearly exists...for basic descriptive and theoretical work to guide inquiry into learning and teaching" (p. 1).

For IR&DT to be a viable alternative r and d strategy, therefore, it should provide knowledge that helps explain new phenomena, adds new information about, or expands already existing information regarding previously identified phenomena. If, in addition, this knowledge explains relationships among variables, the effort will have made a useful contribution to theory building.

Inasmuch as IR&DT emphasizes r and d on teaching, knowledge and theories of teaching and learning are the areas to which the strategy should make the greatest contribution. Moreover, building upon IR&DT's problem-solving requirement, these contributions should emphasize teaching and learning as they occur in the classroom thereby adding to the knowledge base in classroom research which, according to Doyle (1977c), is emerging as a distinctive form of research and "promises to be a framework for much of the discourse about teaching and learning" (p. 1).

Further, with an increasing awareness of the need to attend to the complexities of teaching and learning as they occur in the classroom and the types of inquiry that are being advocated as the methods most likely to yield salient new understandings of classroom processes, IR&DT not only appears to have high potential for making important contributions to the education knowledge base, but an r and d strategy of this nature seems to be demanded.

The complexity of classroom life has been studied, described and discussed by researchers such as Jackson (1968) and Smith and Geoffrey (1968). More recently Bronfenbrenner (1976) outlined an ecological perspective of education that presented 20 propositions related to analysis of the properties of the system at four levels of complexity. Tikunoff (1977) noted that "what we call classroom teaching and learning is embedded in a complex myriad of interdependent variables, all of them situationally specific" (p. 2). Doyle (1977c) reminded us that:

> It is clear that classrooms are not single-purpose "learning" environments that exist for short periods of time as is often the case in laboratory studies. Nor is the teacher's task confined to a few selected behaviors that occur during a two-hour period in October, as is often assumed in many observational studies. (p. 4)

Kennedy (1977) also referred to "the complex array of human/environmental behaviors and variables which influence classroom events, phenomena, and processes" (p. 2).

As reported by Mishler (1979), Delamont (1976) demonstrated that "an adequate understanding of the meaning and significance of profile differences for classroom behavior and learning can only be provided through information about the contexts of behavior: the subject matter taught, the physical setting of the classroom, the personal 'front' of the teacher, and student opinions and interpretations of teacher behavior" (p. 7). Goodlad (1977) made a similar point relative to the school curriculum:

> Clearly, there are quite different curriculum domains, what teachers think it is, what observers perceive it to be, and what students perceive and experience. And so there are at least three data sources to be utilized in arriving at conclusions about what the curriculum is. (p. 5)

Ward (1977) indicated that to gain an understanding of the phenomena of education, knowledge needed to be obtained regarding: (a) the perspectives of those individuals who engage in teaching and learning, (b) the processes of teaching and learning, and (c) the context within which teaching and learning occur. Bronfenbrenner (1976) and others, e.g., Carini (1975), emphasized the importance of the phenomenological perspective. Participants' views of the situation, including a multiplicity of meanings when more than one individual is involved, are considered essential for understanding educational phenomena.

Further, data collection methods are recognized as influencing what is observed and, thus, what is "known." Perceived reality, particularly participants' perceptions of the conceptual definitions explicit and implicit in a given research design, are considered to be especially important for validation of experimental manipulations and outcomes.

Thus, awareness of the multi-dimensionality of teaching and learning as they occur in the classroom has introduced a need for data acquisition and data analysis procedures appropriate to this complexity. A predominence of researchers writing in this area, question the suitability of traditional research methods. Statements by Bronfenbrenner and Mishler sum up these views. According to Bronfenbrenner's (1976) opinion:

> To state the thesis in it's briefest and boldest form, contemporary educational researches are characterized by experimental designs that are primarily statistical rather than scientific; that is these designs enable us to predict the concomitants of certain combinations of conditions but not to understand the causal connections that produce the observed effects. (p. 159)

Mishler (1979) identified a paradox:

> One side of the paradox is that we all know that human action and experience are context dependent and can only be understood within their contexts...We rely on context to understand the behavior and speech of others and to ensure that our own behavior is understood, implicitly grounding our interpretations of motives and intentions in context...the other side of the paradox is that this ordinary and commonsense understanding of meaning as context dependent has been excluded from the main tradition of theory and research in the social and psychological sciences and in the application of this tradition to educational research. As theorists and researchers, we tend to behave as if context were the enemy of understanding rather than the resource for understanding which it is in our everyday lives. (p. 2)

In the search for research methods--more specifically data acquisition and data analysis methods--that facilitate study of the multiple dimensions, variables, meanings, etc., that appear to be simultaneously occurring in the classroom, considerable attention is being given to naturalistic study of classroom events and processes and to procedures for obtaining multiple interpretations of as many dimensions, events, etc., as possible. Naturalistic study involves natural setting, natural treatment and natural behavior as discussed by Tunnel (1977) and reviewed earlier in this chapter (see "Integrity of the Classroom" section). Most often such studies emphasize descriptive research that captures the full complexity of situational, experiential, and communicational variables (see Tikunoff, 1977). The work of ethnomethodologists, ecologists, sociolinguists, and phenomenologists is germane. Understanding what is going on develops from many hours of sensitive observation (e.g., see Glaser and Strauss, 1967; Carini, 1975; Miller, 1977). The views and perspectives of participant as well as nonparticipant observers of a phenomenon are obtained. In terms of classroom research:

> There appears to be a greater respect for the setting in which teachers work, reflected both in the inclusion of context variables in data collection and analysis and in the more modest expectations concerning the extent to which the classroom can be easily changed... there seems to be an emerging awareness of the complexities inherent in the practitioner's world and an attempt to account for this complexity in designing research, interpreting findings, and suggesting applicability. (Doyle, 1977c, p. 5)

To carry out such research without the full cooperation and collaboration of the person responsible for maintaining classroom life--namely, the teacher--is impossible. Teacher (and student) interpretations of the meanings of events must be obtained. Natural classroom settings must be maintained even though a vast array of variables is studied. Whenever data collection procedures intrude upon that naturalness, this must be recognized, described and the results explained. When the multiplicity of possible variables of interest must be reduced, these decisions must be based on insights regarding which comprise the essence of the teaching or learning phenomenon being studied and which violate it. The teacher has such information. To use it should add to our understanding of classroom teaching and learning and increase the likelihood that the information necessary for gaining new understandings will be obtained.

Kennedy (1977) referred to three levels at which teachers could contribute to classroom research: problem identification and hypothesis generation, matching inquiry modes to classroom variables and their dimensions, and formulating, clarifying and illuminating inferences which lead to a theory of teaching. Inasmuch as teachers are included on an IR&DT team and collaboration and maintaining the integrity of the classroom are considered essential features of the strategy, it is possible for research conducted in this manner to meet the new knowledge requirements specified above. A strength of IR&DT is that not only teaching perspectives but also research and training perspectives are applied in the research. This is important because, as Doyle (1977c) noted, "simply being a teacher does not automatically produce a valid understanding of the complexities of the classroom environment" (p. 7).

Consequently, by definition, composition, and purpose, IR&DT, as conceptualized, provides a means for obtaining important new knowledge and for contributing to the development of a theory of classroom teaching. Contrary to Kerlinger's (1977) views in which he suggests that applied research (research tied to solving problems) "does not ordinarily lead to understanding the complex phenomena behind educational practice" (p. 7), research that incorporates the capabilities and insights inherent in IR&DT does have promise for increasing our understanding of classroom phenomena. It is difficult to think of a problem of interest to teachers that, in order to be resolved, would not also provide researchers an abundance of complexities to study and come to understand.

Assumption 3: The Results of IR&DT Will Be Generalizable

A single premise underlines this third assumption: to be generalizable the results of IR&DT and the strategy itself will have to apply to more than the people and setting(s) in which the r and d is carried out. To achieve this end, it is assumed that the problem that is studied, the data collection and analysis strategies that are used, and the interpretations that are derived will be relevant and of interest at the practitioner's level in addition to contributing new understandings to educational processes. The findings will "fit" other classrooms and other r and d situations.

Considerable space in this chapter already has been devoted to discussions of teachers' distrust of r and d. Brophy (1974) spoke to the problem:

> By and large, we simply are not studying problems that are related to the needs of the classroom teacher. (p. 48)

Doyle (1977c) extended the assertion:

> Research on learning and teaching has seldom had an appreciative audience among practicing teachers. The reasons for this may lie partly in the technical language of many research reports or in the thinly-disguised indictments of teachers that are often implicit in this work. One suspects, however, that the causes of this indifference are deeper. From the perspective of the teacher, many of the propositions from research are arid and trivial. (p. 4)

IR&DT purposefully is designed to alleviate such circumstances. By giving teachers parity in determining the problem(s) to be studied and by providing a combination of people and settings that facilitates the study of complex variables in natural ways, it is assumed that the applicability of the r and d will be more relevant for others. Bussis, Chittenden and Amarel (1978) in reporting on a collaborative research study noted that "the data being tied to everyday occurrence and accessible on a continuing basis, were 'ordinary,' realistic, and recognizable to other teachers as well" (p. 29). Mishler (1979) further suggested that by better fitting the research methods to the phenomena of interest--another possible advantage of IR&DT--science need not be an alienating force, e.g., in this instance, need not alienate potential users. Stake (1978) called for research that is "epistemologically in harmony with the reader's experience and thus to that person a natural basis for generalization" (p. 5).

Based on the studies of r and d dissemination and utilization that were mentioned earlier in this chapter (for example, see Berman and McLaughlin, 1978; Emrick, et al., 1977), one can expect that IR&DT team members and their respective institutions will consider the work relevant and helpful. The extent to which others will recognize this relevance and, therefore, use the outcomes and the strategy will depend, in part, upon the availability of the data that are necessary to determine whether the outcomes and strategy are applicable in another setting. IR&DT's essential features should promote interactions and decisions that will increase the likelihood that the outcomes will be relevant to more than the team members. Likewise, if the strategy proves workable, it should apply to other locales and problem areas. On the other hand, there is no guarantee that this will occur.

Inherent in this discussion is the inference that generalizable r and d outcomes are the most useful. Three approaches to establishing generalizability can be applied to IR&DT. One is *scientific* or *statistical* generalizability. In this approach, sample size, random selection of subjects, use of experimental and control groups, and random assignment of subjects to these groups are essential. Thus, given a sufficiently large sample and random selection and assignment of subjects, educational r and d outcomes are presumed to be applicable to and usable by teachers, students, and others. However, the difficulties in achieving random selection and assignment of subjects and the costs of conducting r and d with large samples are only too well known.[11] For the IR&DT strategy to gain usability through meeting such requirements is unlikely.

The second view of generalizability has been given various labels. Recently Mishler (1979) referred to *context-dependent* rules or generalizability. He suggested that such feelings are situationally grounded and situationally understood. Hamilton (1978) suggested that generalizability is in the eye of the user. If situations, contexts, and behaviors are described by the researcher such that the user can identify with them and find them helpful and the understandings that are reported likewise are so described, Hamilton proposed that *cognitive* generalizability is possible. Stake (1978) discussed *naturalistic* generalization which is arrived at:

> by recognizing the similarities of objects and issues in and out of context and by sensing the natural covariance of happenings. (p. 6)

In 1977, Ward introduced *logical-situational* generalizability. This was further explicated by Tikunoff and Ward (1978). Consonant with the views mentioned above, logical-situational generalizability builds on the identification of contexts that are similar to those in which the r and d is conducted. Information is necessary about: (a) the specific classrooms, schools, and communities in which the research is conducted; (b) the teachers and students involved in the research; (c) the instructional setting and the instructional-social system(s) operating within that setting; and (d) the ways in which teachers and students within the natural setting behave naturally. These data, then, make it possible to generalize to other situations on the basis of specific similarities and differences rather than on the premise that all types of situations were randomly represented in the r and d effort.

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[11] For further discussion of these issues, see Cronbach, 1976.

The applicability of this type of generalizability to IR&DT is evident. Several features of the strategy encourage attention to and acquisition of context data. Providing full and thorough knowledge of the particulars outlined by Ward and Tikunoff (1978) so they can be recognized by persons in other settings make it possible for r and d outcomes emanating from work with a limited number of settings and subjects (often fewer than 10) to be extended to other situations. As noted by Stake (1978), "to generalize this way is to be both intuitive and empirical, not idiotic" (p. 6).

The third form of generalizability that has relevance for assessing the usefulness of IR&DT was posed by Corey (1953). In discussing generalizations resulting from action research, Corey stated that "in a real sense action research studies are undertaken not to make possible *lateral* extensions of generalizations but to make possible *vertical* extensions, with the vertical line going into the future" (p. 14). What this means is that persons and institutions involved in IR&DT will generalize what they learn as a result of participating in the r and d effort in other future activities. For example, while teachers from the one IR&DT site found out about distractions and coping strategies that occurred in their classrooms in 1978, the procedures for inquiring into their teaching, the insights about their classrooms, and any changes that were acquired and introduced at that time can continue to be used in 1979, 1930, 1981, and on into the future. The same could be said for the researcher, the trainer/developer, and any other persons who were involved with IR&DT in some way. IR&DT's influence will not cease at the end of a particular r and d activity.

Assumption 4: Participants' Unique Skills and Perspectives Will Contribute to the Success of IR&DT

Inasmuch as IR&DT has as a major purpose the study of classroom-based educational problems which teachers consider to be critical and the identification of ways to resolve these problems, innovation (change) is an implicit goal that applies to all participants and their related role groups. Obviously, the teacher will be expected to accept new responsibilities and apply emergent r and d outcomes. In order to carry out the inquiry, investigate a multiplicity of variables in ways that maintain natural conditions, and employ multiple perspectives throughout the r and d process, the researcher will have to use and/or invent procedures and processes with which he or she may have had only limited or no prior experience. The trainer/developer often will have to assume new roles and create and use new training procedures and processes rather than using workshops and training materials with which he or she is familiar. As a result, the individuals who comprise an IR&DT team can be expected to influence to a large extent both the degree to which the critical features of IR&DT are operable and the contributions to new knowledge and general usefulness of their work.

Since *innovation* is a descriptor that is common across all participants, literature from the field of change and innovation, particularly educational change, suggests characteristics, skills, and behaviors of individuals that may be more or less apt to be productive. Griffin and Lieberman (1974) reviewed the characteristics and behaviors that had been found to support innovation. Building on the work of Rogers (1965), they stated that:

> Innovators are venturesome, tend toward the avante garde, and are risk takers. As such, they move beyond what they know in terms of models and prior experience. They are cosmopolitan in that they are active and are acquainted with worlds beyond their own prescribed system...They are

> aware of and consult information sources not integrally related to their own professional circumstances. (p. 3)

It is assumed that IR&DT teams composed of participants with characteristics such as these will be inclined to explore unusual, challenging, and thus, perhaps more important, problems, will pursue the r and d effort through use of the outcomes by others, and will continue to use IR&DT procedures, processes, and findings in the future.

While all participants may demonstrate similar risk taking, cosmopolitanism, etc., each role member also is expected to bring unique skills and insights to the r and d process and to assume some unique responsibilities. Requirements for effective, productive involvement in IR&DT thus may differ for each role group for, as Mann (1978) observed, persons, initially at least, tend to "conduct themselves within a framework of rules, regulations, guidelines, standard operating procedures, and other constraints [that might be called] the boundaries of practice" (p. 399). Specific characteristics and requirements for the teacher, researcher, and trainer/developer are discussed below.

Teacher. Based on the Rand study of educational innovation (see earlier references to the study) McLaughlin and Marsh (1978) suggested that "in terms of knowledge about the practice of teaching, teachers often represent the best clinical expertise available" (p. 87). However, in order for the teacher to bring this expertise to r and d, in most instances, r and d must come to the classroom. And to meet this condition, the teacher must be willing to have other adults in the classroom and see this as a positive factor not interfering with teaching and learning. Further comments by McLaughlin and Marsh indicated that in addition:

> Teachers will also have to overcome a...tendency to feel they are the victim of external forces. Currently,

> teachers seem impatient with the long and often arduous process of collaborative planning, learning and adaptation necessary to make innovations successful. Ironically, teachers currently want to give priority to their role as classroom teachers when the Rand study suggests that their role as collaborative planners has become increasingly important. (p. 91)

The teacher's belief that he or she can help even the most difficult or unmotivated students--a sense of efficacy--also was found by the Rand Study (see Berman and McLaughlin, 1978) to be related to successful educational change. In terms of IR&DT, this suggests that attitudes about professional competence may not only determine whether a teacher will volunteer to work with a team but also may influence the types of roles and responsibilities the teacher assumes on the team. This, in turn, might affect the extent to which parity and equal assumption of responsibility are accomplished.

Other experiences, skills and characteristics that may facilitate the teacher's participation in IR&DT include an ability for and previous practice in describing and analyzing aspects of his or her students and his or her own classroom behavior and experience. A teacher who is able to differentiate among multiple teaching acts and suggest relationships between different approaches to instruction and different forms of student behavior should be ready to inquire into the classroom in ways that will advance the r and d process. A teacher who has not thought about classroom teaching and learning in such rational ways may need time to explore these aspects of his or her own classroom prior to entering the r and d process. Previous experience in an innovative project may provide an opportunity to acquire such skills and insights. As noted by Bussis, Chittenden, and Amarel (1978) in a discussion of collaborative research, "at the very least, an environment that has some tradition of collegial relationships, where teaching is considered the pursuit of common professional goals, is necessary" (p. 31). A teacher who, for the most part, has worked alone behind closed doors may be expected to make less contribution to IR&DT than one who has sought help with and been involved in school assessment and improvement efforts. Likewise, the teacher who believes everything is fine probably will not be interested in or add much to IR&DT. Thus, a feeling of discontent with what is going on in the classroom that is not so negative that it interfers with objectivity may better motivate teacher involvement.

Further, to participate in IR&DT, a teacher needs to consider how to restructure his or her time since the r and d activities may require time away from the classroom. He or she needs to have or develop observation skills, have skill in or learn something about data collection strategies so he or she can participate in decisions about which strategies are appropriate for studying what aspects of classroom-based teaching and learning given the problem that is being investigated, and feel comfortable with analyzing and interpreting data, drawing conclusions, and writing sections of reports. It is the input of the teacher at each decision point during the r and d process that will shape the research and training so it remains relevant. The teacher's ability to detect when the classroom is being disrupted, identify those data collection and analysis procedures and those findings that are likely to have the greatest impact on other teachers and then communicate this information to other participants will influence the outcomes of IR&DT.

Researcher. The types of r and d to be carried out by an IR&DT team were discussed earlier (see the contribution to knowledge assumption). If a team does, in fact, pursue research that attends to the complexities of the classroom and the elements and behaviors that occur there naturally, the researcher on the team will be required to have an unusually high level of skill. Several researchers who are encouraging the move to complex, natural studies have spoken to the demands this places on the research. Tunnel (1977) indicated that "when a researcher leaves his laboratory setting, observes real behavior without forcing it into preconceived structures, and employs naturally occurring life events as treatments, he sacrifices experimental control" (p. 434). He further stated that "learning to recognize naturalistic dimensions and learning to exploit them will require some reeducation among psychologists" (p. 436). Miller (1977) suggested that "the more experience an investigator has, the more likely he or she is to avert or at least cope with various methodological concerns, practical drawbacks, and inconveniences, many of which are unique to naturalistic research" (p. 217). To illustrate, he referred to sample size, locating settings, adjusting schedules on the basis of other's needs, establishing proper data sampling and reduction procedures, making frequent checks for inter and intraobserver agreement, and, generally, *always being prepared for the unexpected* challenges that will face the researcher. To meet such demands, a highly skilled, yet flexible researcher is needed, one who is a scientist rather than a statistical technician. He or she needs to be skilled in the use of multiple research paradigms (e.g., the three paradigms for research on teaching discussed by Doyle (1977b), and in the use of both quantitative and qualitative data collection and analysis procedures.

Given the problem-solving focus of IR&DT, the researcher also may find continuing self-criticism and revision of concepts and procedures is necessary (for further discussion see Azrin, 1977). This, too, demands scientific rigor. In addition, IR&DT implies that the researcher will gain access to what teachers know about the classroom. Doyle (1977c) advised that this requires "interpretive skill, patience, and the ability to ask the right questions in the right manner" (p. 7). Krathwohl (1974) suggested that researchers modify their views of themselves "as knowledge producers toward that of producers of findings to be confirmed in practice" (p. 83), which, in turn, places heavy reliance upon practitioners in validating or invalidating the research. To paraphrase Emery and Trist (1973), under the auspices of IR&DT, the researcher gains access to the fundamental data needed to conduct classroom research through professional relationships that are based on *privileged conditions*. Teachers' and trainer/developers' willingness to share ideas, open up their classrooms, critique and try out research strategies, discuss and interpret findings *with* the researcher are vital to IR&DT. Unless the researcher wins these conditions by honoring, respecting, and responding to the knowledge and skills of other team members and proving his or her competence in supplying some kind of unique service to the team and making practical applications of existing r and d knowledge, IR&DT cannot be carried out as specified. Emery and Trist described the circumstances well in discussing social science fields in which generally accepted theories have not as yet been advanced:

> If at this stage the problem is determined too exlusively by the scientist himself, the hypotheses to be tested will tend to be doctrines rather than true theories, or as a reaction against this, investigation will become artificially restricted to what can be measured exactly. One may expect both too much formal conceptualization of a shallow kind and too much secondary manipulation of meagre primary data. (p. 112)

There is a great difference between the technician who prescribes a research design and the scientific role an IR&DT researcher is expected to perform. He or she must be an unusual person--acceptable and comfortable in public schools, possessing interpersonal and group process skills, and in possession of a wide ranging knowledge of research methods and procedures and the ability to capitalize upon unanticipated events, opportunities, and insights. In addition, he or she must be able to recognize personal limitations of research skills, and know when and how to seek help from other researchers.

Trainer/Developer. The trainer/developer on an IR&DT team serves much the same role as a linking agent. He or she plays a major part in the development of the training program or procedures that build from the research procedures and findings. He or she also carries out a variety of other functions such as verifying the extent to which certain problems warrant investigation and resolution, designing data collection procedures, training data collectors, and bringing what is already known regarding classroom life to the team. In these roles, it is necessary that the trainer/developer serve as an impartial observer or a "mirror" rather than as a solutions bank.[12] To do this, he must be familiar with and tolerant of teaching styles and instructional paradigms that might not align with his or her own views of effective teaching and learning. Otherwise, *work with* r and d will not be achieved.

Experience and skill in instructional design also are required. In other words, the trainer/developer must have human relations and organizational skills as well as technical knowledge and must be able to fill a process-helping role (see Hood and Cates, 1978, p. 90). Among the interpersonal skills that may be useful are skill in facilitating group interaction and managing conflict. Organizational skills might include development of new structures or procedures. Technical knowledge may include skill in problem analysis as well as in observing teaching and designing training programs. It is important to note that Emrick and Peterson (1978) stated that "the available evidence suggests that the development of [such] capabilities is accomplished more through staff selection, experience, and socialization processes than through formal staff training procedures" (p. 82), which may be for the best since Howey and Feistritzer (1978) indicated there was "relatively little research and development capabilitiy in most of the institutions that prepare teachers" (p. 32). Above all, the trainer/developer should have had experience as a classroom teacher, be sufficiently acquainted with research to serve a liaison, facilitator role, and approach teacher training as a process of inquiry as well as a pedagogical process.

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[12] This phrase was taken from Kirby (1973).

To reiterate, through sensitive recruitment and selection among those who volunteer to become involved in IR&DT (teachers, researchers, trainer/developers), it should be possible to identify a group of individuals who can work collaboratively to solve problems and produce useful new knowledge and understandings about classrooms. Just as IR&DT is not the only alternative r and d strategy that may be considered in lieu of the linear approach, not all teachers, researchers, or trainer/developers may possess the skills and attitudes necessary for approaching the improvement of teaching and learning via an IR&DT process. Involvement of those who are prepared for and interested in the strategy is important to its success.

Summary

This chapter has presented an overview of the essential features of IR&DT and the major assumptions upon which the strategy is based. The remainder of this report presents the purpose, procedures and findings from the study of IR&DT.

CHAPTER TWO

PURPOSES AND PROCEDURES

Because IR&DT has few precedents in educational research and development (r and d) practices, the study of its implementation was largely an emergent one. Although certain propositions regarding the potential for the strategy were formulated by its originators prior to the study (see Chapter One), it was not possible in advance of implementation to frame an evaluation design which delineated the entire range of possibilities or expectations to be investigated in the same manner the study of a well developed, widely field-tested strategy for change can be specified. Instead, it was necessary to speculate upon various essential foci for study and then, concurrently and subsequently, keep a careful watch for activities, practices, problems, etc., which emerged as implementation of the strategy moved forward and which appeared to be important areas for investigation. This stance required a comprehensive design that was largely descriptive both in methodology and purpose. Although certain instruments were formulated and/or adapted with specific data sources in mind, the core of the study depended upon data collection procedures that captured large and varied data sets and that, consequently, allowed data analyses building from the sorting of information in terms of whether or not that information appeared to be central to an understanding of the enactment of IR&DT. As might be expected, using this approach far more data were collected than will be used in this report.

The remainder of this chapter presents the overarching purposes of the IR&DT Study: the questions that guided data collection, analyses and interpretation; and the procedures that were employed throughout the study.

Purposes of the Implementation Study of IR&DT

Whenever a new conception of engaging in educational practice is proposed, it is useful to describe the enactment of that conception. In this instance, a new strategy was recommended for conducting research and development on teaching that differed markedly from conventional approaches to educational r and d. As discussed in Chapter One, these differences departed sufficiently from the linear r and d approach and from action research to demand a clear understanding of what the consequences of that departure were for participants, institutions, and funding agencies. Thus, the IR&DT Study was undertaken. The three principal goals of the study were:

(1) to investigate and understand the process of implementing IR&DT at two sites in order to identify and describe the requirements and characteristics of a "successful" implementation of the IR&DT strategy;

(2) to determine whether the r and d outcomes that resulted from these two implementations provided important and useful new information, procedures, and processes to the field of education while successfully achieving commonly accepted r and d standards; and

(3) to determine what, if any, changes in persons and institutions might result from participation in IR&DT.

While these goals provided somewhat broad and open-ended boundaries for the study, there is precedent which suggests that such an open-ended study is potentially a powerful one. The I/D/E/A study of school change referenced in Chapter One was a five-year attempt to understand how schools and the persons in them go about making alterations in school practice. Within this broad purpose, certain more specific objectives emerged naturally and productively *during the course of the study*. The central premise was that the investigators were unable reasonably to specify in advance what *should* occur and, therefore, it was necessary to record and study what *did* occur (for example, see Bentzen, 1974). The study of IR&DT followed a similar path. Although there were certain claims made prior to the implementation of the strategy, the degree of precision necessary for generating hypotheses could be achieved only through implementation.

This, of course, is not to say that the study of IR&DT was undertaken mindlessly. Certain knowledge about schools in general and about the requirements for successful intervention informed the study purposes and procedures. For example, McLaughlin (1976) suggested that school innovation attempts almost always call for some "mutual adaptation" of original conceptions of the desired change. Sarason (1971) indicated that the isolation of teachers from other teachers is a potential deterrent to most school change objectives. Baldridge and Deal (1975) discussed school related implementation issues including the hierarchical distinctions between levels of the educational bureaucracy, the difficulties these distinctions cause when collaboration is necessary, and the resultant potentially dysfunctional relationship between educational institutions. These and other understandings (see Chapter One) provided guidance to the formulation of specific study questions.

The process used in the IR&DT Study, then, was one in which three broad purposes were posed originally followed by statement of more specific questions as the implementation evolved. These questions were derived from (1) certain claims made for IR&DT by its originators, (2) knowledge drawn from other studies of school innovation, and (3) the course of events experienced by the two IR&DT teams.

Study Questions

Several specific questions were derived and investigated within each of the broad IR&DT Study foci. A listing of these questions follows. Since the questions are derived from the essential features of IR&DT and the assumptions underlying the strategy, all of which were reviewed in Chapter One, that discussion will not be repeated here. However, a brief statement of the rationale for selecting each question will be given following the listing of the questions for each major area of inquiry.

Study of Implementation Process

In order to (1) investigate and understand IR&DT implementation, and (2) identify and describe more specifically the requirements of a *successful* IR&DT strategy, seven questions were explored relative to enactment of the strategy. These were:

- To what degree does the r and d conducted at each site have a problem solving focus, maintain the integrity of the classroom, and involve concurrent attention to conducting research and developing training for others that grows from both the research strategy and the findings?
- To what degree do IR&DT team members enact role behaviors projected for each role function?
- What is the nature of the interactiveness of the IR&DT teams?
- What is the nature of the institutional relationships required to carry out the implementation?
- What is the nature and the extent of technical assistance given

to the IR&DT teams?

- What is the nature and extent of the activities of the National Advisory Panel?
- What is the nature and extent of dissemination activities directly related to IR&DT?

In addition, two questions were asked regarding relationships between the manner in which IR&DT was implemented and the resultant r and d outcomes:

- To what degree do patterns of team behavior, collectively and individually, appear to be related to the quality of the r and d products?
- What individual and site characteristics appear to be related to the nature and quality of the r and d products?

A consequence of the careful consideration given to the potential of IR&DT as an alternative r and d strategy was the specification of team member roles and responsibilities that were considered desirable and essential for IR&DT to be effective. As noted in Chapter One, teachers, researchers, and trainer/developers were expected to contribute unique insights and skills to the r and d process. The Vermont and California team members were introduced to their respective roles and responsibilities as part of their preliminary orientation through illustrative listings of the types of activities each type of team member might undertake at various steps in an r and d process. Both parity and the assumption by each team member of appropriate responsibilities were considered essential to collaboration on an IR&DT team. However, precisely how a group charged with IR&DT should function collaboratively for *maximum* effect was not known. Early in the implementation process, it became clear that, as groups, the two IR&DT teams were functioning quite differently. Although the potential consequences of these differences were not clear, it appeared important to monitor and analyze the interactions of each IR&DT team in the event that it became fruitful to speculate on the relation between interactions and r and d outcomes.

A widely-held belief about schools and other educational institutions is that they tend to be isolated from other like and unlike institutions (for example, see Miles, 1964; and Katz, 1971). Yet, IR&DT calls for both fiscal/administrative and substantive relationships among several distinctly different institutions including, for example, school systems, institutions of higher education, regional educational laboratories and other r and d agencies and funding agencies. Within the first few weeks of IR&DT implementation, it became clear that institutional relationships had a central role in the process. Therefore, data were collected to determine how these relationships were accomplished and what their possible association with "successful" IR&DT might be in terms of the interactiveness of the process and the quality of the resultant products.

Availability and use of technical assistance was another supporting element that was investigated. Help such as provision of research literature references, training in certain data collection techniques, advice regarding data analyses, and on-site problem solving was described, as were the persons who provided the assistance (e.g., Far West Laboratory staff members or others), the point at which the help was sought, and the persons who initiated the request. Another technical assistance strategy was the creation of a panel of experts (National Advisory Panel) to advise the Far West Laboratory staff and IR&DT teams at certain points during the implementation period. This was rooted in the belief that external review and critique would be helpful. The strategy built on the proposition that educational institutions are essentially "closed" systems and thus may not be aware of resources, ideologies, etc., that would enhance the r and d effort. National Advisory Panel advice and activities were carefully documented.

Although the two IR&DT teams were to a large extent protected by the Far West Laboratory staff from external requests for information about the strategy, there were instances when team members and Far West Laboratory staff participated in activities which, directly or indirectly, made the implementation public. Attendance at professional meetings and discussions with visitors to the various institutions provided opportunities to discuss IR&DT. Records were kept of such activities in terms of their nature and possible impact.

As noted above, different patterns of role behavior and interaction were observed early in the two teams. Personal, professional, and institutional characteristics also varied across the two teams. While relationships between these differences and the resultant r and d products were not seen as firm cause and effect relationships, it seemed worthwhile to speculate regarding possible connections and their importance for the future success of IR&DT efforts.

R and D Outcomes

An underlying assumption of IR&DT is that it will produce research findings and training processes, procedures, materials, etc., that are as scientifically acceptable as r and d conducted in more conventional modes. At the same time, it was proposed that these products would contribute new understandings of teaching and classroom life that would be useful to other teachers, researchers, and teacher trainers. To investigate the soundness of this claim, four questions were explored:

- To what degree does the research conducted and reported by each IR&DT team conform to commonly accepted standards of rigor?

- To what degree does the research conducted and reported by each IR&DT team contribute significant new knowledge and understandings to the field of education, particularly new knowledge about teaching?
- To what degree does the training conducted and reported by each IR&DT team conform to commonly accepted standards of rigor?
- To what degree are each team's research and training outcomes considered to be useful by practitioners?

These questions involve actions, opinions and judgments of persons external to the IR&DT process as enacted at the two sites. As suggested by the research questions, IR&DT outcomes should meet four r and d standards: (1) the rigor with which the research is designed and conducted; (2) the rigor with which development efforts, in this instance training programs, are designed, developed, and tested; (3) the contribution of the r and d to the field in terms of new knowledge; and (4) the usefulness of the r and d products to others, particularly practitioners such as classroom teachers, school district staff development personnel, and teacher educators or trainers working in institutions of higher education. To determine the extent to which these standards were met, judgmental criteria were established and judgments made.

While general views regarding rigor and usefulness regularly are applied at the implicit level in evaluating educational r and d in general, explicit application of such criteria in the IR&DT Study involved a three step process. First, persons who were recognized as knowledgeable and insightful members of the research, development, and practitioner communities were identified. Second, these persons were asked to make explicit in as precise terms as possible the criteria to be applied to IR&DT outcomes. Third, the results of each team's effort were assessed using these criteria.

In making these judgments, it seemed appropriate to compare these outcomes to those produced by the "typical" research or development effort. While ideal achievement may be desirable, it was deemed that judgments based on the "usual" would indicate both the extent to which high expectations for rigor and usefulness were met and the degree to which application of IR&DT might be expected, at least, to maintain present standards of excellence. The procedures used in arriving at these judgments are discussed later in this chapter.

In addition to the judgments outlined above, national experts representing the roles of IR&DT team members and persons at each site who served in the same roles as the various team members and who were deemed to be very like or very unlike a particular member in skill and viewpoint toward educational r and d were asked to rate (judge) the r and d outcomes based on a predetermined set of criteria. This procedure also is described later in this chapter.

Intervention Outcomes

An essential feature of IR&DT is recognition that, in and of itself, IR&DT serves as both an alternative r and d strategy and a strategy for bringing about changes in the participating individuals and institutions. Several types of changes were anticipated. These included changes in personal beliefs, views, knowledge and skills, and changes in the ways institutions functioned. Questions related to these areas of interest included:

- To what degree do participants alter their views regarding educational r and d? schooling? school-related phenomena?
- To what degree do participants change relative to r and d knowledge and skills?

- What do participants report regarding the professional and personal effects of IR&DT participation?
- What are the apparent effects of IR&DT upon the participating institutions?

IR&DT admits, among other purposes, to attempting to broaden the perspectives of participants and break down some of the implicit and explicit boundaries between professional orientations. That is, the strategy calls for teachers, researchers, and trainer/developers to form a new cohort group. It is believed that engagement in this merger of beliefs, skills, and knowledge in order to accomplish problem identification and solution will call for and provide opportunities for participants to acquire understandings and skills which might be considered atypical for their respective role groups. Further, alterations in orientations to r and d, and more sensitivity to and ability to analyze school-related issues might be expected to result. Monitoring of such beliefs and skills was included as part of the IR&DT Study.

The issue of professional and personal satisfaction and the more specific issue of which aspects of IR&DT are more or less satisfying than others also were of interest. It is unlikely that IR&DT will have much chance for success if the participants do not believe they are engaged in meaningful activity (see Berman and McLaughlin, 1975). Therefore, inquiry into participants' views regarding the experience was included.

Further, it was recognized that the potential influence of past practices, belief systems, and expectations of institutions upon innovation is great.[13] Schools are more likely to remain the same than they are to change. One of the tests of a school-oriented innovation, then, is whether or not the innovation

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13. For further discussion of this statement, see Abbott (1969).

can "crack" through persistent institutional practices. While the IR&DT Study was not of sufficient duration to make it possible to document lasting institutional effects, some data in this regard were obtained.

Building upon findings related to the above four intervention questions, an overall question was:

- Is IR&DT an effective strategy for professional development and school problem solving?

Judging the extent to which IR&DT effected desired changes in people and resolved classroom-based problems at each site was an important aspect of the IR&DT Study. The answer to this latter questions will help determine whether IR&DT should be viewed as an alternative change as well as an alternative r and d strategy.

Procedures

A variety of procedures were employed to obtain information necessary to answer the questions posed above. In many instances, the procedures were designed to capture a broad range of information that could be analyzed from several different perspectives. Other procedures were formulated to collect specific information for a single-focus analysis. A discussion follows of the data collection procedures and instruments and the data analysis procedures used for each of the three major areas of inquiry.

Study of Implementation Process

Seven data sources were used to record and monitor the process of IR&DT implementation at each site. These included: (1) audio recordings of all team meetings, (2) participant logs, (3) personal contact forms, (4) problem identification questionnaire, (5) baseline interview, (6) final interview, and (7) orientation questionnaire.

Audio recordings of team meetings. The two teams met formally and informally during the fifteen and one-half month IR&DT implementation. In order to determine the nature, substance, and procedures of the formal meetings, the teams were instructed to audio record each meeting. The recorded audiotapes then were mailed to Far West Laboratory where they were monitored and analyzed.

The instructions given to the teams regarding audio recording of team meetings are presented in Appendix C. Teams were requested to assign a member to be responsible for the recording. This individual was expected to set up the recorder, verify that the equipment was working, note on the audiotape the date, time, and duration of the meeting, and mail the completed tape to the Far West Laboratory. Thus, the procedure was relatively inconspicious after the initial period of sensitivity to the notion that conversations were being recorded. It also was considerate of team members' time and provided an objective source of information regarding who spoke with whom and about what topics at each meeting.

As might be expected, the data base formed by these audio recordings is extensive. The teams met an average of once each week during the initial ten months of IR&DT activities, somewhat less often during the last five and one-half months. Although cumbersome and time consuming at the data analysis stage (see next paragraph), this procedure for capturing team planning and decision-making was an invaluable source for understanding what actually happened in the course of IR&DT implementation. In addition, these data provided a base for speculating about possible relationships among the various questions posed earlier in this chapter.

To obtain the data reported in Chapter Four, 85 hours of formal team meetings were monitored for each site. Thirty hours were monitored for each team through the completion of a research design and 55 hours were monitored from the initiation of each site's data collection activities through development and conduct of training and reporting of both research and training.

The initial 30 hours represent differential percentages of total team meeting times for the two teams. For the team located in California (see Chapter Three for description of teams), the 30 hours are more than half the total of 54 hours of formal meeting time through completion of the research design, which included the period from September 1, 1977, through January 31, 1978. The other team (located in Vermont), on the other hand, did not finish its research design phase until the end of March 1978 (see Chapter Four for discussion of delay); consequently, the number of formal team meeting hours reached over 80 hours from initiation of IR&DT in September 1977 to completion of the research design. The 30 hours of monitoring for this latter team, then, represents less than half of all team time spent in formal meetings through March 1978. Because of the extended period of time used by the Vermont team and the additional meetings used to consider the research design, more team meetings were monitored to obtain the 30 hours of coded data for this team than for the California team. Fifteen meetings of the Vermont team and 12 meetings of the California team were monitored and coded in detail.

The 55 hours of meetings monitored and coded from data collection through development and conduct of training and reporting of findings also represent differential portions of all meetings held by each team. During this time, the California team held 38 formal meetings, the Vermont team, 46 formal meetings. For California, 23 meetings were monitored, 25 for Vermont.

The monitoring process consisted of listening to the audio recordings and making notes in summary and occasional verbatim form of the topics considered by the team and the persons engaged in the talk. These notes were categorized according to:

- talk related to the various steps in the research process, e.g., (1) identification of issue to be studied, (2) selection of research strategies, (3) determination of the nature of data to be collected, (4) selection of data collection procedures, (5) preparation of the research design in the form of a written statement, (6) collection of data, (7) analysis of data, (8) development and reporting of conclusions;
- talk related to development, conduct, and reporting of the team's training effort;
- other talk, e.g., personal and professional supportive talk, personal irrelevant talk, professional irrelevant talk, talk related to management and other activities involving Far West Laboratory, development talk unrelated to IR&DT.

The summaries of the meetings then were subjected to a coding scheme based on the above topical categories. Each topic of discussion was given a letter or numeral indicating its nature and for each topic it was determined who engaged in the discussion of that topic. For example, in one instance the summary indicated, "TC-2 said that she had tried out the classification scheme and said it worked easily and produced the information desired by the team." TC-2 referred to California teacher number two. The segment was coded as related to research step 4, selection of data collection procedures.

Since there were differential numbers of talk segments within teams across the various meetings that were scored and between teams across meetings and all scored segments, the frequencies of talk segments for each topical category across all meetings and for each meeting were converted to percentage scores. Chapter Four, then, discusses both teams as they interacted during formal meetings related to IR&DT implementation in the form of percentages of total talk segments of the teams related to topical categories and ascribed to the respective team members.

Participant logs. Because it was believed that individual team members would have perceptions, beliefs, and reactions to IR&DT implementation which would not be revealed in the audio recordings of formal team meetings, a form was devised for individual recording of such thoughts and feelings. Each participant was furnished with a log comprised of two-sheet, self-carbon pages which asked him or her to record events that might not have been part of a formal meeting but that he or she considered important for the IR&DT effort or for his or her own growth and development. The team member was asked to describe his or her reactions to, feelings about, etc., these events. He or she also was asked to react to events that occurred during the formal meetings if he or she wished to do so. Team members forwarded one copy of the log pages to the Far West Laboratory and retained a copy. Logs were mailed at whatever point a team member chose to do so. (See Appendix C for a sample log page and instructions for using the log.)

Although the consistency of using the log was not uniform among the members of each team or across the two teams, there was no team member who ignored the procedure. Thus, the procedure provided participants with opportunities to present data regarding a wide range of personal contacts, instructional difficulties, insights into the IR&DT process, reactions to people and events, etc., in a private manner. It is interesting to note that, in the case of the California team, team members used their logs to inform their own research and training report writing by referring to log entries for information that had faded from memory by the end of the implementation period. Hence, the log data appear to have recorded important information regarding team as well as personal activities.

Personal contact report. The study of IR&DT implementation involved multiple institutions as well as individuals. In such complex endeavors, much valuable information can be lost if an investigator is not present to capture a transaction, event, etc., as it occurs. Since it was not possible to be on site at all times, a means was devised to obtain data regarding as many IR&DT-related events as possible. Far West Laboratory staff and team members at each site were asked to record all telephone conversations and personal contacts related to IR&DT on a form that called for a description of the substance of the contact, listing of the person(s) contacted, and reactions to the contact. Written communications related to IR&DT also were reported by attaching a copy of tne correspondence to the form. (See Appendix C for a copy of the Personal Contact Report.)

This procedure was particularly valuable for keeping reasonably precise recordings of IR&DT-related transactions involving Far West Laboratory staff. Because most staff were involved in a variety of IR&DT-relevant activities, these forms (once the staff became habituated to using them) provided an important source of information that would have been impossible to recapture on a recall basis at the end of the study. On the other hand, team members considered the forms to be redundant in that they used their logs to record most events of this type. Since personal contact forms were used infrequently by the teams, their logs were reviewed to obtain these data.

Problem identification questionnaire. Inasmuch as the IR&DT teams were expected to identify an issue for study, it was considered desirable to determine if issues believed to be important prior to participation in the IR&DT effort were selected or whether the problem that was eventually selected by the team emerged as part of the team's deliberations. Prior to the initiation of IR&DT activities, participants were asked to list five problems facing teachers (and teaching) and to indicate the percent of colleagues they believed would agree with them regarding each issue. In order to determine whether the participants still held the same views after completing the IR&DT effort, the questionnaire was readministered at the conclusion of the study.

The questionnaire is presented in Appendix C. It is adapted from one developed for use in the I/D/E/A study of school change.[14]

Baseline interview. An interview schedule was formulated for use prior to the implementation of IR&DT. After sites and team members were selected, each team member and other relevant institutional representatives were interviewed regarding personal data, perceptions about the quality and utility of educational research in general, and expectations for participation in the project. These data served largely as the information source for the description of the sites and participants that is reported in Chapter Three. They also provided a baseline with which to compare participants' end-of-study perceptions.

Final interview. At the conclusion of the implementation period, an open-ended interview was conducted with each team member and relevant institutional representatives. A portion of this interview focused on topics connected with implementation. These included: (a) the nature of any adaptive mechanisms required of people and institutions in order to carry out IR&DT, (b) problems encountered by the participants, (c) perceptions regarding the technical assistance required and received, (d) perceptions regarding the role of the National Advisory Panel, (e) advice to others who might engage in the process, and (f) perceptions as to how IR&DT might be altered in a positive fashion.

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[14] For application of questionnaire in I/D/E/A study see Mary M. Bentzen (1974).

Orientation questionnaire. As will be discussed in Chapter Four, prior to starting IR&DT activities, Far West Laboratory staff conducted a three-day orientation at each site for the purpose of acquainting the participants with IR&DT and the roles and responsibilities each team member might assume. The meetings also introduced the teams to the use of qualitative as well as quantitative data in educational research and discussions were held about educational problems and issues of interest to the team members.

Since such an orientation might be seen as an important element in future uses of the IR&DT strategy, at the end of the orientation at each site team members were asked to complete a questionnaire indicating what they had learned, how satisfied they were with the experience, what they envisioned their future role on the team to be, and how they, other team members, and the Far West Laboratory staff might help the work of the team. (A copy of the questionnaire is presented in Appendix C.)

R and D Outcomes

The assumptions underlying IR&DT (see Chapter One) and the IR&DT Study questions stated earlier in this chapter suggest that: (a) this alternative r and d strategy should provide new knowledge about and understandings of teaching as it occurs in the classroom, (b) this knowledge should be acquired through an r and d effort that is as rigorous in method and procedure as r and d conducted according to other conventional strategies, and (c) this knowledge should be as useful to researchers, teachers, and trainer/developers as other r and d outcomes. In other words, although the persons involved in

IR&DT may be other than ones usually engaged in educational r and d (e.g., teachers working *with* researchers and trainer/developers rather than researchers working *on* teachers as subjects), the quality and usefulness of these efforts should be equal to commonly accepted standards.

Judgment of the extent to which the r and d outcomes (products) of IR&DT met such expectations was based on two constructs. These were *rigor* and *usefulness*. In general, rigor was defined as precise, exact, accurate adherence to standards of excellence based upon the notions of scientific precision. Usefulness was defined according to the second definition in the American College Dictionary, 1966 edition, as "of practical use, as for doing work; producing material results; supplying common needs" (p. 1338). Products were considered to be the written reports prepared by the teams at the conclusion of the implementation period. These reports present in detail the purpose, procedures, and outcomes of the research and training efforts carried out by each team.

To obtain judgments regarding the rigor and usefulness of the IR&DT r and d outcomes, it was deemed necessary to determine whether persons considered to be expert and influential as researchers, trainer/developers, and teachers saw the strategy as having a positive yield. Since these persons would be ones who might particpate in IR&DT if the strategy were to expand to a broader application, it was considered desirable to understand their reactions to both the procedures used in and the products of the strategy.

Three sets of judging procedures were used. The first employed a jury system. The second utilized a rating scale to obtain experts' judgments regarding the r and d outcomes. The third elicited judgments about the respective team's products from team member counterparts in their respective institutions. Participants in the jury system and the expert judgment procedure judged the products from both sites. The team member counterparts judged only the products from the local site. A more complete discussion of each procedure follows.

Jury system. Six juries of three members each were formed to judge the IR&DT r and d outcomes. These are described briefly below. More complete descriptions are presented in Chapter Five. Jury members are listed in Appendix D.

- Jury to judge rigor of research. This jury consisted of three members: a researcher from an institution of higher education, a researcher from a national r and d center, and a director of research from a local educational agency.
- Jury to judge contribution to new knowledge of research outcomes. This jury was comprised of a researcher from an institution of higher education who also serves as research editor for a national professional educational research journal, a researcher from a national r and d center, and a member of the research and evaluation staff of a local educational agency.
- Jury to judge rigor of training. This jury included a professor from an institution of higher education, a co-director of a national r and d center who also serves as associate dean of the university's school of education, and a member of a staff development office in a local educational agency.
- Three juries to judge usefulness of research and training outcomes to practitioners. One jury was comprised of teachers and, obviously, represented the views of the classroom teacher. A second included professors from institutions of higher education. This jury represented the views of persons engaged in university or college-based inservice and preservice training of teachers as well as professors of advanced degree majors in education. The third included an associate superintendent for instruction from a large urban school district, a school principal, and a director of professional development for a national teachers' organization. This jury represented the views of individuals responsible for designing and conducting school-based staff development for a variety of educational personnel.

The intent in selecting the jury members was to include the view points and judgments of persons from a wide spectrum of educational roles and responsibilities related to teaching, teacher training, and teacher education in particular, and educational r and d in general. Jury members were selected from among a list of nominees received from the National Advisory Panel for

IR&DT, various staff members of the National Institute of Education, and representatives of the National Education Association, American Federation of Teachers, and Elementary School Principals Association.

The juries were convened over a two week period from February 19 through March 1, 1979. Each jury met for one day.

Prior to coming to the respective meetings, jury members were asked to read the relevant reports from the IR&DT teams. In the case of the three usefulness juries, this involved reading *all* the reports from both sites. The jury judging research rigor and the one judging contribution to knowledge concentrated on the research reports which included the Evolution of the Study, Formal Research, and four Teacher Case Studies from California and the Formal Research and Teacher Case Study reports from Vermont. The rigor of training jury was required to read the training reports from each site and had the research reports available for reference. Also prior to meeting, jury members were asked to identify and list the judgment criteria they used.

When the juries met, the three members were asked to agree upon one set of criteria for judging the r and d outcomes according to the focus assigned to their respective jury. Typically, these criteria developed as a composite of those brought to the meeting by the jury members. Once the criteria were established, the relevant r and d products of one team were judged using these criteria, then those of the other team underwent an independent judgment. The jury members determined which team's work should be judged first. In most instances, a consensus judgment was reached for each team's outcomes on each criteria. If a jury member strongly disagreed with the judgment of the other two members, a minority opinion was recorded for that particular criterion related to that product.

All jury meetings were attended by two Far West Laboratory staff members who handled the audio recording of the deliberations and served as clarifiers in order to be certain the exact meaning of each criteria had been precisely stated and that all jury members had a common understanding of the parameters on which each criterion was based. Far West Laboratory staff did not participate in the judgment process.

Chapter Five reports the outcomes of the jury deliberations. The various criteria used to judge the r and d outcomes are presented along with each jury's judgments relative to how the r and d outcomes of the California team and the Vermont team rate on these criteria *compared with* what the jury members know about and consider to be *typical r and d outcomes* in education.

Expert opinion. To obtain additional opinions regarding the r and d outcomes resulting from the two IR&DT teams' efforts, seven persons from the field of education were asked to rate the research and training products using a scale composed of 32 items and one open-ended question.

The experts included three teachers--one each from an urban, a suburban, and a rural setting; two researchers--one from an r and d agency and one from a local education agency; and two teacher educators--one from an institution of higher education and one from a local educational agency. A listing of the experts is presented in Appendix D.

Nominations for persons to serve in this capacity were solicited from the Teaching Division of the National Institute of Education, the National Education Association, the American Federation of Teachers, and the IR&DT National Advisory Panel. Participants were contacted by Far West Laboratory staff and asked to participate.

Copies of all the research and training products from each IR&DT team were sent to the experts. The experts were free to utilize whatever reports were useful in making their judgments relative to each item on the rating scale. The rating scale also was mailed to each expert, one scale for each team. The experts were asked to read the reports, complete the ratings and the open-ended question for each team, and return the completed scale to Far West Laboratory within four weeks from receipt of the reports. Mailings occurred in late January 1979. All ratings were returned by March 1, 1979.

As noted above, the r and d outcomes rating scale included 32 Likert-like items which presented a statement about r and d products and asked the respondent to indicate the degree to which the product being judged reflected that quality, construct, etc. (See Appendix C for copy of the rating scales.) These items were formulated in terms of both the substance of the r and d and the professional roles of the persons responding to them. Certain items were addressed differently for different roles. For example, the issue of usefulness was addressed to teachers in terms of whether or not (or to what degree) they believed the material or ideas in the reports could be put to immediate use in classrooms. Teacher educators were asked the degree to which the respondent could use the materials or ideas presented in the reports in training preservice and inservice teachers. Researchers were asked to determine the degree to which the findings and ideas presented in the reports added new knowledge to the field and advanced the state of research methodology for studying teaching. Most items were the same across role types.

In addition to the items that called for rating the IR&DT r and d outcomes, one open-ended question was included. This afforded the respondents an opportunity to indicate their personal reactions, insights, feelings, etc., regarding IR&DT as well as comment further upon the work of either IR&DT team.

The rating scale was pilot tested in the fall of 1978 prior to use with the experts. Each item was checked with persons who were knowledgeable about educational research and training to be certain that the intent was clear and that important constructs and features of r and d products had been included. A formal test of the items that resulted from this review and critique was conducted with 20 teachers, 20 researchers, and 20 teacher trainers who were enrolled in graduate courses at Teachers College, Columbia University in Fall 1978. These persons were asked to apply the scale in rating a doctoral dissertation on teaching. The dissertation was rated twice with a four week intervening period between the first and second ratings. Based on a Pearson Product Moment correlation coefficient (see Hays, 1963, p. 416), the test-retest reliability for the scale was .81 for the Teacher Questionnaire, .91 for the Researcher Questionnaire and .83 for the Trainer/Developer Questionnaire. Therefore, using this rating scale, persons' views regarding r and d outcomes were considered to be reliable.

Upon receipt of the completed ratings from the seven experts, individual ratings on those items that were common across role types were compiled and summarized. For those items that differed somewhat according to role-type (see above example), the findings were compiled and compared within and across role-types. Responses to the open-ended question were categorized according to topic, recommendations, opinions, etc. The results are reported in Chapter Five.

Participant counterpart opinions. As noted earlier, part of the evaluation of the two IR&DT teams' products consisted of eliciting judgments from participants' counterparts drawn from their own institutions. Information from these individuals, it was believed, would indicate the extent to which the respective team's r and d outcomes were perceived to achieve the standards of rigor and usefulness commonly applied to educational r and d at that particular site. While it was not known whether local standards would differ from those applied by the more nationally oriented jury members and experts, it was considered worthwhile to obtain such information. If differences were found, these might prove useful both for interpreting the manner in which IR&DT was implemented at each site and for judging the effect of IR&DT at a particular site.

The same rating scale and open-ended question used to obtain the expert opinions was used with the participant counterparts.

IR&DT members, according to role, were asked to nominate two persons from their respective institutions to respond to the rating scales. One person was to be an individual who served in the same role capacity as the respective team member and who was *very like* the team member in terms of role orientation, skill and knowledge level, and experience. The other person was to be *very unlike* the team member in orientation, etc., but also was to be serving in the same role capacity. Thus, the researcher and trainer/developer on each team selected two people, and the teacher members of each team were asked to collaborate in selecting one like and one unlike teacher to respond.

The same procedures used with the experts were used to obtain these ratings. However, persons at each site received copies of only the research and training reports prepared by that site team and were asked to rate and respond to only that team's r and d outcomes.

Counterpart ratings were compiled and are reported in Chapter Five in a manner similar to that described for the experts' ratings.

Intervention Outcomes

Throughout this report, the potential value of IR&DT as a change (intervention) strategy as well as an alternative r and d strategy has been alluded to. In particular, the discussion of the assumptions on which the strategy is based (see Chapter One) pointed out some possible ways in which participation in an IR&DT effort might change persons and institutions.

In order to investigate what, if any, changes in people and institutions appeared to be related to participation in IR&DT, several data sources were utilized. Some of these sources are the same as those used to study the implementation itself. For example, the audio recordings of team meetings and the participant logs contained information that suggested changes in participants and institutions. The baseline interview also provided information that was important for determining what and how changes may have occurred. In addition, four data sources related specifically to intervention outcomes were developed and used. These are the professional development questionnaire; the beliefs about teacning/learning questionnaire; the research, teaching, development skill/knowledge self perception questionnaire; and the intervention questions included in the final interview. Each is discussed briefly below.

Professional development questionnaire. This questionnaire was designed to discover the areas of schooling participants believed were most interesting to themselves and to others as topics (objects) for professional development activities. Participants were presented with topics--e.g., reading, science, classroom management--and asked the degree to which they were interested in them as teacher education foci (very interested, somewhat interested, not interested) and the degree to which they believed teachers in general were interested in them. Various modes of delivering teacher self-development--e.g., demonstration lessons, visits to successful programs, workshops--also were presented and participants were asked to indicate their and other teachers' interest in participating in such activities.

Participants' interests and their views regarding teachers' interests, were used to determine (a) whether the entry interests of the team members related to the research and training foci decided upon by the team, and

(b) whether the interest levels of the participants and their perceptions of others' interests changed during the course of enacting IR&DT. The questionnaire was administered at the orientation session for each team and at the conclusion of the implementation period. A copy of the questionnaire is included in Appendix C.

Beliefs about teaching/learning questionnaire. Because the focus of IR&DT is upon teaching, it was considered necessary to determine participants' views about teaching and learning. A questionnaire used in the I/D/E/A study of school change (see Bentzen, 1974) was adapted for this purpose. This instrument asks respondents to indicate the degree to which they agree with 21 statements about teaching and learning. Analysis of the responses provides insights into the respondents' beliefs about optimal teaching/learning situations.

In order to determine whether team members' views altered after participation in IR&DT, the questionnaire was administered during the orientation session and at the conclusion of the implementation period. The questionnaire appears in Appendix C.

Research, teaching, development skills and knowledge self perception questionnaire. As a result of participation in IR&DT, it was proposed that team members would increase their knowledge, skill, and sensitivity related to the three professional roles represented on the team. To determine whether changes occurred, it was necessary to ascertain, in advance of participation, the knowledge and skill levels of participants and then to measure these same areas at the conclusion of IR&DT. As noted above, the audio recordings of the team meetings revealed some information of this sort.

In addition, a questionnaire prepared by the American Educational Research Association (see Educational Researcher, June 1977) was adapted for use. This questionnaire uses self-perception rather than a formal assessment of knowledge and skill to measure a respondent's abilities. Respondents are asked to indicate if they are highly skilled, somewhat skilled, or have no skill in 66 research, development, or teaching knowledge and ability areas.

While a more objective check on actual skill might be desirable in addition to the above opinion data, such a measure was not used due to concern that participants would reject participation on the team if a measure of this type were required upon entry. We believe, nonetheless, that participants' appraisals of their skills were honest and objective. Observations of team members' behavior during the IR&DT implementation were used to verify both this assumption and the opinions that were reported. The questionnaire is included in Appendix C.

Final interview. As discussed earlier, an open-ended interview was conducted at the end of the IR&DT Study with each IR&DT team member and relevant other institutional representatives at each site. Several topics included in this interview were intended to provide information regarding participant and institutional change. These included (a) perceptions of the value of the process they had just completed, (b) evidence that IR&DT had influenced professional behavior, (c) evidence that IR&DT had influenced institutional settings, and (d) commitment to the idea of IR&DT.

Data obtained from these interviews and from the other intervention outcome data sources are compiled and reported in Chapter Six.

Summary

This chapter has presented the broad purposes of the IR&DT Study, the study questions that were asked, and the procedures used to gather and analyze data.

It will be remembered that an overall intent of the study was to present as much information about as many aspects of IR&DT implementation as feasible and possible. To do this, data sources often were used to provide answers to several questions. Few one-to-one relations between a question and a single data source existed. Information was sorted, coded, resorted, coded differently, and otherwise manipulated in several ways. As many data as possible were brought to each question presented in this chapter. Therefore, any question might be informed by questionnaire responses, log entries, segments from team meeting audio recordings, interviews, jury member or expert judgments, etc. The chapters which follow are informed by this variety of perspectives in such a fashion as to understand as fully as possible the consequences of implementing IR&DT in terms of team interaction, inter-institutional relationships, research and development outcomes, and individual and site effects. Throughout, the belief is maintained that IR&DT should be understood both as an r and d strategy that has theoretical and propositional value and as an intervention strategy that must be understood in terms of the context in which it is placed.

CHAPTER THREE

IR&DT PARTICIPANTS: INSTITUTIONS AND PEOPLE

The purpose of this chapter is to describe: (a) the institutional settings in which IR&DT was implemented and (b) the people who participated in the implementation. As noted previously, for purposes of this study, IR&DT was implemented at two sites--one in an urban setting in California, the other in a rural setting in Vermont. These settings were purposely selected in order to observe IR&DT implementation under diverse circumstances. For example, given urban and rural school sites, local education agency capability to staff an IR&DT team with school district personnel rather than relying upon university professors to fill the researcher and trainer/developer roles might vary; the background, experience, knowledge and skills of team members might differ; the significance of IR&DT to local institutions might differ; and those problems considered important by teachers might vary. Further, by including sites with widely differing geographic and population characteristics, the potential was increased for providing implementation contexts and experiences which a broad range of teachers, researchers, trainer/developers, and institutions throughout the nation might identify as being similar and relevant to their own situation(s). This, in turn, expanded the capacity for logical-situational generalizability of both the study findings and the IR&DT strategy.

Data regarding the participating institutions and people were collected in late May and early June 1977 prior to the August 1977 orientations which launched IR&DT activities at each site. The data included: (a) institutional context information, (b) personal information about participants, (c) academic background and present position of participants, (d) innovative educational program experience of participants, (e) research orientation of participants,

(f) knowledge and perceptions of IR&DT held by particpants, and (g) self-reports and brief observations of professional behaviors of teacher participants. Most data were collected through a flexible, open-ended interview schedule. A separate schedule was developed for each role considered central or closely related to IR&DT implementation. Interviews were conducted with IR&DT team members (researcher, trainer/developer, and teachers), principals of the schools in which the teachers on the IR&DT teams taught, school district administrators, and, in Vermont, university administrators. Following the interviews, responses were summarized according to the data sets reported in this chapter. For reporting purposes, all persons interviewed were assigned a letter code, either C for California or V for Vermont. When it was necessary to identify role, a position descriptor was used following the letter code, e.g., Teacher V-2 would identify one of the teachers on the Vermont IR&DT team.

Institutions Involved in IR&DT Implementation

At both the California and Vermont sites, several institutions were involved. A discussion follows of the characteristics of these institutions along with a description of the institutional procedures used to recruit the IR&DT team members at each site.

California Site

The California site was located in the San Diego Unified School District, San Diego, California. This is a large urban, public school system serving the ninth largest municipality in the United States. The district serves students from pre-school through secondary school ages. The total student population was 118,697 in the 1977-78 school year. At the elementary level (grades kindergarten through six), the enrollment included 64,107 students in 122 schools. This elementary student population was classified as 66 percent white, 14.5 percent Black, 14 percent Hispanic, 5.2 percent Asian American, and the remainder "other."[15] These students and their schools were distributed over a 195 square mile area.

The school district maintains a staff development office that includes a number of full time trainers and resource teachers. Most inservice training activities offered to teachers, administrators, and paraprofessionals in the district are planned and conducted by this office.

A research and evaluation office also is operated by the district. This office conducts evaluations of special programs funded through various forms of state and federal categorical aid and carries out the district's student achievement and other assessment studies. As with staff development, most of the research and evaluation work done in the district is designed, directed and performed by the staff of this office.

Procedures used to recruit IR&DT participants. IR&DT was introduced to the school system by Far West Laboratory staff who met in Spring 1977 with central office personnel, in particular, the inservice education director and the director of elementary schools for the area in which the proposed IR&DT schools were located.[16] Prior relations between Far West Laboratory and the school system had included attempts to collaborate in a project designed to improve teaching through cumulative feedback to teachers of data regarding teacher-student interactions in their respective classrooms. Teachers were to use the data to reflect upon, alter, and study their own behavior in relation

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15. These and further descriptors and estimates are from the school district's 1977-1978 ethnic survey.
16. San Diego Unified School District has been divided into several geographic areas for purposes of school planning and program development.

to its effects upon students. Due to reorganization and redirection of efforts within the foundation that was to support this project, the training was never implemented. However, the elementary school at which the training was to occur was still interested in working with Far West Laboratory so the area superintendent carried information about IR&DT to this and other schools. As expected, the principal of the original cooperating school agreed to continue working with Far West Laboratory and the principal of another elementary school that had been recommended by the inservice education director because it was involved in a special school improvement project also expressed interest. Once these arrangements were firm, Far West Laboratory staff met with the teachers in each school to explain IR&DT and the role teachers would be expected to serve during the implementation. After this meeting, those teachers who indicated they would like to participate were interviewed individually. At this time, both the teacher and the Laboratory staff member asked questions. Teachers' misperceptions of IR&DT were clarified and doubts regarding their capability to contribute to IR&DT were discussed. Ultimately, three teachers from the original school and one teacher from the other school were selected to participate.

In the meantime, the inservice education director and Far West Laboratory staff also were involved in identifying potential candidates for the researcher and trainer/developer roles. For the researcher position, the inservice education director recommended a member of the school district research and evaluation staff whom he considered to be creative and flexible in his approach to evaluation of the district's innovative educational programs. The inservice education director also recommended a member of the school district's staff development unit to serve in the trainer/developer position. Both these persons met with Far West Laboratory staff before being selected to work with the teachers in the implementation effort, and subsequently both agreed to join the project.

Schools in which teachers on IR&DT team taught. Although the Rand study of educational change (see Berman and McLaughlin, 1978, pp. 33) indicated that school characteristics such as academic, ethnic, economic, and social makeup of student population, size of school, stability of staff, and school's experience with other innovations did not affect the outcomes or continuation measures of the innovative projects that were studied, such data nonetheless were acquired relative to the two schools at which the teachers on the California team taught in order to make it possible to discuss these characteristics should implementation and other outcomes of the IR&DT study appear to be related to them.

School I was a kindergarten through grade six school located in a lower socio-economic neighborhood. In 1977-78 the student enrollment was approximately 400 with 75 percent Black, 20 percent Hispanic, 3 percent Asian American, and 2 percent white. Eighty-five percent of the students were eligible for free lunch with an additional 13 percent qualifying for reduced-price lunch. There was a high turnover of students during the school year. In 1977-78, 148 new students enrolled and 120 transferred out. Many children lived with only one parent. In 1977, the principal described the school as an "oasis in the desert" for children who experienced many inconsistencies and deprivations in their lives outside the school.

There were 15 faculty members at the school. During the several years prior to the IR&DT study, there had been approximately a 50 percent turnover in the teacher population due to the necessity of balancing the ethnic representation on the staff and the principal's desire to "strengthen" the school staff.

The school was (and continues to be) involved in several "special" support programs. These included special support based on California Senate Bill 9 and Assembly Bill 65 for school improvement, participation in federal ESEA Title I and Follow Through programs, and work with the California Early Childhood Education Program. In these areas the school continues to be considered exemplary by district administrators, the principal, and the teachers in the school. Visitors come to the school for purposes of observing the instructional program and to evaluate the special federal, state, and local projects that are present. In 1977-78, the school was organized around self-contained classrooms. According to the principal, school-wide problems were faced and acted upon in a largely informal fashion that depended upon a high level of rapport among staff and an open information system.

School II, while located in the San Diego Unified School District, differed markedly from School I. School II also served students in kindergarten through grade six. However, the student population was considerably larger, 1200 students, and different in ethnic composition, 77 percent white, 11 percent Hispanic, 9 percent Asian American, and 3 percent Black students. In 1977, the principal reported that many of the students were "gifted." The school was located in a middle income, suburban area some distance from the center of the city. Because of burgeoning population, portable buildings had been added to the site. The school was constructed around an "open space" concept, e.g., large, carpeted classroom spaces shared by at least two teachers and 55, or so, students. The principal reported strong cooperative parent involvement in the school--approximately 150 parent volunteers helped in the school in 1977-78. A special program for gifted students was in operation. Students who qualified as mentally gifted were eligible to attend School II regardless of where they lived in the school district.

In 1977-78, there were 40 teachers on the School II faculty which was organized into a series of teacher advisory groups. These groups served as policy and administrative units for the school. The principal believed that the teachers were strong, competent, and had positive professional and social relations with one another. Teacher turnover was low. Most of the teachers had worked in the school since its planning stages.

Vermont Site

The Vermont site for the IR&DT Study included two cooperating institutions. These were the College of Education and Social Services of the University of Vermont and the Underhill Independent School District.

The University of Vermont is located in Burlington, one of the larger city centers in Vermont with a population of some 40,000 people. The university served approximately 8,000 undergraduate students in 1977-78, 1,000 of whom were enrolled in the College of Education and Social Services. Of the latter students, approximately 120 were enrolled in the preservice elementary teaching program. This program was described by the acting dean as being "conventional" with the exception of an early childhood teacher training program that recently had won an award for innovativeness and the special education teacher training program. Although the Vermont legislature had mandated competencies for graduating high school seniors, as of the 1977-78 academic year, the college had given little or no attention to providing training for preservice teachers in how to plan and conduct such programs. Further, decisions regarding preservice program content and method were seen as being made principally by individual professors and instructors even though program planning and review committees had been formed both for the college as a whole and for the preservice teacher training programs. In 1977, the college was making a strong effort to "take the program to the field" by providing off-campus courses, workshops, etc. for inservice teachers and other interested persons.

The Vermont school district that participated in the IR&DT Study is part of a supervisory union school district which is a loosely connected federation of seven small independent districts, each with its own board of education but served by one superintendent and the superintendent's staff. This grouping of school districts is marked by the fact that most districts have but one school. When asked how he dealt with seven different school "personalities," the superintendent replied, "Very carefully."

The Underhill Independent District includes only one elementary school serving grades kindergarten through four. In 1977-78 district enrollment included only the 130 or so students registered at the single school. Because of its size and close proximity to the university, the district relied upon university professors and instructors primarily from the College of Education and Social Services to provide whatever professional development, research, or evaluation activities were conducted.

Procedures used to recruit IR&DT participants. Prior to becoming involved in the IR&DT Study, the acting dean of the University of Vermont, College of Education and Social Services, had cooperated with Far West Laboratory in several ways. He had received a variety of information documents from Laboratory staff, particularly the staff involved with the IR&DT Study, had attended a conference on qualitative and quantitative research methods sponsored by the Laboratory, and had used materials developed by Far West Laboratory in teaching a course for preservice teachers.[17] Interestingly, the course was taught cooperatively with the individual who later became the initial trainer/developer on the Vermont IR&DT team. Further, the faculty member who became the researcher on the team had been encouraged by the acting dean to spend his one-semester sabbatical leave at Far West Laboratory in order to gain experience in qualitative research methodology, which he did prior to participation in IR&DT implementation. Information about the proposed IR&DT Study thus was transmitted to the college largely through Far West Laboratory staffs' interactions with the acting dean and the professor who had worked at the Laboratory.

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[17] During 1975, the acting dean worked with Far West Laboratory in a pilot test of the use of teacher-generated questions and naturalistic descriptive data in preservice training. This initiated a continuing dialogue between two institutions.

Before contacting the acting dean at the University of Vermont, College of Education and Social Services, Far West Laboratory staff had searched for a rural site in closer geographic proximity to the Laboratory with little success. It had been difficult, and in most instances impossible, to find persons with the needed research skill in colleges of education located in rural areas. Inasmuch as the Vermont professor who had been at the Laboratory and the instructor who co-taught the pilot preservice course at University of Vermont were well acquainted with Far West Laboratory's programs and the Laboratory staff assigned to the IR&DT Study and vice versa, there was a mutual expectation that they could bring the needed skills to the researcher and trainer/developer roles on an IR&DT team. Thus, placement of a site in Vermont was proposed to and accepted by the National Institute of Education. Further, it was agreed that any subcontract agreements associated with the Vermont IR&DT team's efforts would be with the college.

Once the College of Education and Social Services agreed to participate and the researcher and trainer/developer were designated, these two individuals were asked to recruit the teachers who would be on the team rather than having Far West Laboratory staff travel to Vermont for this purpose. In order to avoid the biasing (focusing) of teacher concerns that the acting dean and researcher thought might occur with inservice teachers who had served as master teachers for the college's preservice teacher training programs, recruitment for IR&DT teacher participants was limited to school districts that currently were not involved in other college programs. Subsequently, the researcher and trainer/developer contacted the superintendent of the supervisory union school district mentioned above and made presentations regarding IR&DT to the faculties of those schools the superintendent suggested might be interested based on conversations with the school principals. After these meetings, the researcher and trainer/ developer recommended a school to be involved in IR&DT. (This school will be referred to as School III throughout the remainder of this report.) The superintendent took the request to the appropriate board of education and the board agreed to allow the school and its teachers to participate. Neither the supervisory district nor the school had worked with Far West Laboratory or the University of Vermont, College of Education and Social Services prior to starting the IR&DT effort.

School in which teachers on IR&DT team taught. As noted above, School III included grades kindergarten through four, with the kindergarten program being supported at the discretion of the school board. At anytime, the board was free to eliminate the program since it was not mandated by state law. Approximately 130 children were enrolled in the school which was located in a sparsely populated area some 20 miles from Burlington. Sixty percent of the children came from families where the principal employer was International Business Machines. The remainder were from families headed by persons who worked in the services fields in nearby towns. Most families included two parents. Almost all the students were white.

The staff included five teachers, one of whom was both the school principal and the fourth grade teacher. The principal believed that the staff enjoyed excellent communication, both within itself and with parents. When problems arose, brief meetings or person-to-person conferences were used to solve them. All individual teacher requests for supplies, staff development and other special activities were subject to approval by the board of education. No special, innovative, federally supported educational programs were underway in the school.

School III was a relatively new facility designed on an openspace concept with the first, second, third, and fourth grade areas open and facing into a common work and library area. The kindergarten classroom was a separate, selfcontained area down the hall from the open structure. A middle school, which also was a new facility, was located immediately adjacent to the primary school. However, the middle school was in a separate school district which was part of the supervisory union district but under the direction of a different board of education than School III. Although close in physical proximity, the entries to the middle and elementary schools were designed such that the teachers from each did not need to interact with those in the other and, in fact, they seldom did. School III thus was largely a separate unit more isolated from than integrated with other schools.

Summary

In summary, the institutional contexts of the two IR&DT teams were markedly different in:

- geographic and community setting,
- size of schools and school district,
- ethnicity of student population,
- complexity of organizational arrangements and relations with other schools and governing bodies,

- school district research and development capability,
- number of separate institutions involved in the IR&DT effort,
- manner in which IR&DT was introduced to institutions and participants,
- manner in which participants were selected,
- previous relations with Far West Laboratory, and
- previous participation in innovative educational programs.

Thus, a contrast in terms of institutional characteristics appears to have been achieved.

Participants in IR&DT Implementation

As noted in Chapter One, an essential feature of IR&DT is inclusion of a researcher, a trainer/developer and one or more teachers in each r and d effort. This requirement was met at both the California and Vermont sites. In addition, various persons at each site served as facilitators for the IR&DT efforts. A description of these individuals follows.

California Participants

The California IR&DT team included a researcher, a trainer/developer, and four teachers. The Director of Inservice Education for the school district and the principals of the two schools at which the IR&DT teachers taught also were involved in the implementation activities to some extent.

Researcher. The researcher on the California team was a white male. He was married with three children. In the Spring 1977 interview, he indicated that he read no popular periodicals regularly. Camping, gardening, and landscaping served as avocational activities. He earned his B.A. and M.A. degrees in education at San Diego State University. He completed his doctorate at the University of California, Los Angeles, during the IR&DT implementation. In addition, he had spent four summers studying at a midwestern university. In reviewing his postsecondary education, he indicated his undergraduate study was of limited use to him in his work as a teacher or as an educational researcher/evaluator. On the other hand, his impression of his advanced work was extremely positive. He termed his Master's program as "good" because "he was in charge" and his Ed.D. program as "excellent."

Up to 1977, the California researcher's professional experience all had been in the San Diego Unified School District. He taught secondary school mathematics for eight years, part of which time he served as a resource teacher providing assistance to other mathematics teachers. For six years immediately prior to the IR&DT effort and as a half-time assignment during his work with the IR&DT team, he served as a program evaluator for the district. In this position, he was assigned to the district's research and evaluation staff, reporting directly to the Director of Evaluation Services. He designed and conducted evaluations of special federal and state categorical aid programs, e.g., federal ESEA Title IVC projects and California's Early Childhood Education Program. His professional experience in elementary schools was solely as an observer and evaluator of these special programs.

When questioned regarding the need for and use of educational research, the California researcher noted that most of the research he knew of was "too clinical." He also stated that its "practical use was limited." In considering the kind of research that was needed, he responded in terms of his immediate institutional setting and his experience in evaluating innovative programs. He believed it was necessary to investigate: (a) the effects on students of several adults in the same classroom, e.g., aides, volunteers, student teachers, as well as the regular teacher; (b) how such adults related to one another and to students; (c) the effects upon students of individualization of instruction; and (d) the relationships between school environments and students' learning styles. He considered the most useful research to be research that influenced program development as well as that which influenced or promoted theory development. In regard to his research heroes and/or heroines, he named Ralph W. Tyler and James Popham, who, interestingly, was the sponsor of his Ed.D. dissertation.

Relative to teacher involvement in research, the California researcher stated that he thought they could do research but he was concerned that in order to do this teachers must be freed from "clerical" duties; given assistance when the need arose, e.g., a substitute teacher; and helped to keep from "burning out" as a consequence of the expenditure of time and energy that would be required.

Based on the questionnaire completed at the IR&DT orientation, the researcher anticipated the team would be expected to identify classroom level problems, frame research questions to get at these problems, pursue them in depth as a consequence of an agreed-to methodology, refrain from disruption or changing the classroom environments, analyze the data, produce findings, and formulate a training product or process for use by others. He indicated that working with IR&DT would be a "growth" opportunity for him. He stated that he believed the process could be generalized for use with other persons and for approaching other problems in the school district even if the products of the team were not "transferable." Looking toward potential problems, the researcher mentioned the difficulty of generalizability of the research outcomes, the limited number of persons involved, the grade level differences of participating teachers, and selfdoubts about whether he had the precise skills and knowledge "the researcher should bring to the project."

Trainer/developer. The trainer/developer on the California team was a divorced white male. By Spring 1977, he had completed his undergraduate degree at San Diego State University and a Master's degree at United States International University, also in San Diego. He was not enrolled in a doctoral program. When asked to comment on his college preparation, the trainer/developer indicated that his undergraduate preparation, which had a teacher training focus, was "poor" but his graduate work had been "mind expanding" and had provided him with many new experiences.

Prior to joining the IR&DT team, the California trainer/developer had spent 11 years as a sixth grade teacher in the San Diego Unified School District and had served as a curriculum resource teacher for the district for the past five years. In this capacity, he designed and conducted inservice workshops for teachers and paraprofessionals, developed curriculum guidebooks and materials for use by teachers, performed demonstration teaching, and designed and conducted parent education programs. He continued in this position on a halftime assignment while working on the IR&DT team. For this period, his development and training efforts focused on sex education for special education students. While carrying out this assignment, he reported to both the Director of Special Education Programs and the Director of Health Services.

During the Spring 1977 interview, the California trainer/developer reported that, up to that time, he had done no research and his general impression of research was that the "application factor" was missing. Further, because he considered research findings to be difficult to apply, he was not aware of a time when he had used research in his work. He indicated that research was needed that would answer questions related to classroom efficiency, management of instruction, effects on student outcomes of interferences in program operation, and the consequences of using aides in the classroom. If teachers were to be involved in research, the trainer/developer suggested they would need "systematic support." He also saw value in giving them a major role in the selection of the methodology to be used, perhaps thereby making the research more useful.

When asked during IR&DT orientation what he would be expected to do as a member of an IR&DT team, the California trainer/developer spoke with specificity about the definition of a problem or question, the systematic researching of that question, the collection of data, and the development of a training component. He saw his involvement with IR&DT as a way to help him in his role as an inservice leader in the school district. He stated that he "loved" his inservice work and wanted to do it as effectively as possible. At the institutional level, he saw immediate applicability of the IR&DT process to the school district's inservice program and eventual applicability of the products of the team's work.

When asked about potential problems, the California trainer/developer hesitated. When probed, he admitted that he was doubtful about the work of the team in terms of products being useful to other teachers who had not participated on the team. He stated that he believed teachers and schools differed on enough dimensions that specific products probably would not be readily "transferable."

Teachers. The California IR&DT team included four teachers. Teachers C-1, C-2, and C-4 taught in School I. Teacher C-3 taught in School II.

Teacher C-1 was a white, divorced female. In 1977, she had been teaching seven years. All her teaching experience had been at School I. Her current assignment was as a kindergarten teacher. She began her college training at a junior college in the San Diego area. After completing the two year junior college program, she transferred to San Diego State University to complete her undergraduate degree and her requirements for a teaching credential. She enrolled in the Master's degree program at San Diego State University during the latter part of the IR&DT effort (Fall 1978).

Teacher C-2 was a white female, married with four children. She began teaching in 1969 and had been at School I more than five years. She completed her undergraduate degree and fifth year teaching credential requirements at San Diego State Univesity. She had a Master's degree in early childhood education from United States International University, also located in San Diego. At the time the IR&DT project was underway, she was teaching a first grade class.

Teacher C-3, a white female, was married and had one child. In 1977, she had taught 14 years, 6 in the San Diego district and 8 in Illinois and Indiana. She completed her undergraduate degree at Eastern Illinois and a Master's in educational administration at Point Loma College in San Diego. During the IR&DT project she was teaching a combination third and fourth grade class at School II. The students in her class were part of the special program for gifted students conducted at the school. As part of the gifted program, Teacher C-3 acted as a consultant for other teachers in the school district and conducted inservice workshops for the district. She also traveled to other school districts, e.g., Jefferson County, Colorado, to give workshops and made a presentation at the World Conference on the Gifted Student held in San Francisco, July 1977.

Teacher C-4 was a white, single female. She began teaching in 1976 after completing her undergraduate degree and teacher training at University of California, Riverside. While involved with IR&DT, Teacher C-2 taught second grade.

All the teachers were involved with innovative educational programs. Teachers C-1, C-2, and C-4 were part of the Follow Through, ESEA Title I, and Early Childhood Education Programs in School I. Each of these programs provided particular types of support to the teacher and students, e.g., a wider variety of materials than would otherwise be available and a teacher aide to work in the classroom from three to five hours a day. As noted above, Teacher C-3 was part of a special program for gifted students located at School II. This program provided funds for enriching the school curriculum. Special parent advisory groups worked with all these programs. Extensive record keeping regarding instructional goals, teaching activities, and student progress also was required of the teachers.

When asked about their hobbies or avocational interests, the California teachers listed outdoor activities such as tennis, camping, bicycling, jogging, and gardening. Teachers C-1, C-2 and C-4 also listed sewing. Teacher C-1 indicated she relaxed by playing the piano. Teacher C-2 did some calligraphy.

In terms of periodicals, Teacher C-1 indicated she read the local newspaper and Time. Teacher C-2 read the local newspaper and Esquire. Teacher C-3 read Psychology Today. Teacher C-4 indicated she did not have time to read periodicals.

Two California teachers had positive comments to make about their professional preparation. Teacher C-4 mentioned what she had found to be an outstanding reading methods and practicum series. Teacher C-3 noted the superb quality of the laboratory school at her undergraduate institution. The other California teachers had not found their undergraduate teacher training to be useful.

Both teachers with earned Masters' degrees reported positive experiences. They indicated the programs were productive because the freedom and responsibility for completion of the degree rested with the student.

Relative to their inservice education experiences, all the California teachers reported positively. Teacher C-3 had not taken inservice work for sometime, but rather had been conducting such courses. She nonetheless had a favorable impression of the topics that had been offered recently as inservice workshops.

Prior to participating in IR&DT, the research experience of the California teachers was limited. Teachers C-3 and C-4 indicated they had conducted "library research" as part of their undergraduate and graduate education, respectively. Teacher C-2 noted that she had attempted to apply some of the ideas of Maslow to her classroom but stressed that this was not research as she understood it, but a series of "tryouts" of ideas with little systematic attention to record keeping, consequences and effects, or follow through. Teacher C-3 indicated she had used findings from studies on value clarification and awareness in her teaching. The other teachers were not aware that they had used findings from research studies.

In talking about their general impressions of educational research, the California teachers had negative impressions or had no impression at all. Comments were made such as: "The usual educational researcher isn't aware of what goes on in schools from day to day," "It isn't useful to teachers in real schools," and "I think research is often biased."

Two California teachers had been involved with teacher training programs by serving as master teachers for student teachers from nearby colleges of education.[18] In fact Teacher C-3 asked if she should continue working with a student teacher during IR&DT implementation and was advised against it by a Far West Laboratory staff member since the presence of a student teacher was not "typical" of most classrooms. Teacher C-3 concurred with the recommendation.

The California teachers most frequently consulted with their colleagues (other teachers) when they needed help with a classroom-related problem or wanted to talk over a teaching idea. Usually, these conversations were informal in nature. Teacher C-3 also indicated she talked things over with her principal. All indicated there was no systematic attempt to develop a network of problem solvers who met regularly to discuss and work out mutual problems.

In looking toward the IR&DT project, the teachers made the following comments regarding the purpose of IR&DT. These comments were obtained at the beginning of their orientation session in August 1977.

Teacher C-1:	"To help me solve my teaching problems and then to offer the solutions to others."
Teacher C-2:	"It is research based on ideas about teacher education. It will help teachers 'move' children and answer our questions."
Teacher C-3:	"The team decides on a problem. Teachers and others give varied perspectives. We find answers to the problems."
Teacher C-4:	"It is a different research mode. The teacher is at the core. The teacher will do the research with help."

Since IR&DT calls for the teacher to be central in the identification of problems and issues to be studied, data were obtained regarding the teachers' views of their own teaching. These self-reports were expanded through visits to the teachers' classrooms at which time information was obtained regarding classroom environments, teaching styles, and instructional materials. Table III-1 summarizes this information regarding the California teachers.

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[18] It is interesting to note that Teacher C-3 was working with a student teacher at the time of the Spring 1977 interview but could not tell the interviewer the institution with which the student was affiliated.

The teachers talked of their classrooms in terms of organization and structure. Fairness, consistency, and problem students were mentioned as problems. Friendliness, positive reinforcement and openness to students were observed in the classrooms. Teacher C-3 employed an individualized program. The others used small groups as their usual approach to instruction. A variety of instructional materials was used in all the classrooms.

Director of Inservice Education. Throughout the IR&DT effort, the Director of Inservice Education for the school district supported and assisted the California team. In particular, he helped facilitate administrative matters. At a more general level, he gave the project visibility in the school district and advised and assisted the team, particularly the trainer/developer, when requested to do so. Therefore, his background and experience are relevant to the IR&DT study.

The Director of Inservice Education was a white male, married with two children. He completed his undergraduate degree and a Master's degree in curriculum and instruction at San Diego State University. He had taken additional graduate work at Michigan State University and, at the time the IR&DT Study was underway, was enrolled in a doctoral program conducted jointly by Univeristy of Northern Arizona, Flagstaff, Arizona, and Point Loma College in San Diego. He had had four and a half years' teaching experience at the elementary level, had served as a curriculum resource teacher for the San Diego Unified School District, coordinated the elementary summer schools for one year for the district, served as coordinator of inservice education for two years, and, in 1977, had been in his present position for six years.

Table III - 1
California IR&DT Teachers
Teaching Style and Classroom Environment

Teacher	C-1	C-2	C-3	C-4
SELF-REPORT OF TEACHING STYLE	Organized, positive, consistent, firm, happy and learning students	Structured with flexibility, responsive, open to students	Evolved from traditional to open, flexible, individualized	"Benign autocrat," structured freedom, structure with choices, small group work
TEACHING PROBLEMS	Follow-through on curriculum objectives, fairness, consistency with all students	Adequacy of flexibility, finding discipline mode that works for me	Is freedom good? Do students learn as a result of my teaching?	Consistency of my behavior, finding ways to deal with problem students
OBSERVATION OF ENVIRONMENT	Neat, orderly areas; large, sunny; desks in groups; rug for instruction; self-contained	None - Absent on day of observations	Open space, centers, tables in groups, carpeted, TV, screen & projector, no windows, many bulletin boards, easy chairs (shares with 1 other teacher)	Centers and areas, grouped tables, messy, bright/windowed, conventional
OBSERVATION OF STYLE	Positive reinforcement, half group instruction, friendly, accommodating, paces with "fun"	" "	Gentle, informal, diagnostic/prescriptive, consistent, friendly	Positive external reinforcement, group rewards, moves to students, friendly, cheerful
MATERIALS OF INSTRUCTION	Mainly skill-oriented with some games, puzzles etc.; cassettes, earphones, etc.; piano, little student work	" "	Charts/schedules, much student work, artwork/projects, animals, texts, magazines, workbooks, dittos	Displays requiring student response, growing plants, much student work, skill worksheets, charts, etc.

When asked about IR&DT during the Spring 1977 interview, the Director of Inservice Education replied that he saw the goal of the project to be "to conduct valid educational research through the efforts of a team and to compress the time elapsed between the actual research and the dissemination of any resulting staff development (products) over the amount generally consumed in traditional education research." He believed that the potential rewards the school district would receive as a result of participating in IR&DT were the possibility that educational problems would be solved expediently and the formulation of improved staff development activities. In thinking about educational research, in general, he stated that he believed educational research was necessary but it usually was "somewhat inefficient and isolated." He saw no problems relative to implementing IR&DT beyond those few communication and coordination problems that typically occur when the participants are located in several buildings.

School principals. The principal of School I was a black male. The School II principal was a white female.

In terms of persistent school problems, the School I principal indicated that it was difficult to obtain parent involvement in school activities, even in those programs, such as the Early Childhood Education Program, that required parent participation. The high student turnover rate, mentioned earlier in the School I description, also was identified as a continuing issue faced by staff members.

The School I principal had worked with Far West Laboratory staff on the earlier teacher training project (see previous discussion). He heard about IR&DT through the Director of Elementary Education for the geographic area in which School I was loacted. He believed IR&DT would lead to an "examination of methods and strategies that are successful in dealing with classroom problems."

He anticipated that these techniques and strategies would be demonstrated and examined in the actual classroom setting. He hoped the project would result in support for teachers to solve problems and contribute to the desired end of having the "teachers run the school." Achieving this latter goal was the payoff he hoped to get from IR&DT. He was concerned that the teachers who were involved would be overworked particularly because the teachers (C-1, C-2, and C-4) were ones who would be sure they did all their work well.

Regarding educational research, the School I principal reported that he had not been involved in research, that none had been done in School I, that most research wasn't "worth a damn," but that he liked the idea of research that was done in "real" surroundings. He saw his role in the IR&DT effort as a buffer and/or mediator between the project and the life of the school so that that the project activities would not interfere with the learning process.

The School II principal reported no persistent school problems. She indicated the staff was strong, competent, and had positive professional and social relations with one another. Parent involvement in the school was high, with (as noted earlier) some 150 parent volunteers helping in the classrooms. Because the school was constructed around an open-space concept, the principal believed the teachers who asked to be assigned to the school were comfortable with and often enthusiastic about the open structure. Those who did not like sharing space with others, in her opinion, would not request transfers to School II.

The School II principal heard of IR&DT through the same director of elementary education who talked with the principal of School I. The School II principal saw IR&DT as a strategy that would help teachers to find and solve problems which will "help other teachers to teach better." Relative to the payoff for School II of Teacher C-3's involvement in IR&DT, she indicated that she "hadn't thought of it" nor had she thought about how educational research, in general, might help the instructional program at School II. She thought Teacher C-3 being the only teacher from School II might be a problem and suggested adding another teacher.[19] When asked about her role as a principal in IR&DT, she replied, "Teacher C-3 will take care of herself."

Summary of California team. Table III-2 summarizes the background and experience of the California IR&DT team members and the Director of Inservice Education for the district. With the exception of Teacher C-4, who had taught only two years, all the participants had had extensive educational training and experience. This included work with several innovative educational programs as well as completion of graduate degree programs. A preponderance of the team members had completed their undergraduate and graduate training in universities located in or near San Diego, California. Teacher C-3 was the only team member to complete a university degree outside California. She also was the only team member who had been employed by school districts other than San Diego Unified School District.

In reviewing their university experiences, only Teachers C-3 and C-4 identified positive features in their undergraduate work. The other participants found their work at this level to have been of little help when they entered the classroom. All participants who had completed advanced degrees had positive perceptions of these eduational programs.

Most of the participants, including the school principals, had had little experience with educational research. Their opinions about the usefulness of research were predominantly negative. Most could not recall having recently

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[19] Far West Laboratory staff elected not to involve a second teacher at School II because his grade level assignment, grades 5 and 6, was too dissimilar to the primary level teachers who had already been selected.

Table III - 2
California IR&DT Participants
Educational Background and Experience

Participant	Education	Professional Experience	Innovative Ed. Program Experience	Views Regarding Ed. Research	Expectations for IR&DT
RESEARCHER	B.A., San Diego State Univ. M.A., San Diego State Univ. Ed.D. Univ. of Calif., L.A.	8 years teacher, secondary school, San Diego Unified School District; 6 years program evaluator, San Diego Unified School District	Implementation of new material at secondary level Evaluation of several federal and state funded innovative programs	Too clinical; practical use is limited Most useful research influences program development	A growth opportunity Generalize process to approach other problems in the school district
TRAINER/ DEVELOPER	B.A., San Diego State Univ. M.A., United States International University	11 years teacher, elementary school, San Diego Unified School District; 5 years curriculum resource teacher, San Diego Unified School District	Design and conduct of inservice workshops related to innovative programs	Application factor is missing Need research that relates to the classroom	Help him in his role as an inservice leader in the school district Applicability of process and products of team's work to school district inservice activities
TEACHER C-1	B.A., San Diego State Univ. Currently enrolled in M.A. program, San Diego State University	7 years teacher, elementary school, San Diego Unified School District	ESEA Title I, Follow Through, Early Childhood Education Program	Negative	Help solve my teaching problems
TEACHER C-2	B.A., San Diego State Univ. M.A., United States International University	8 years teacher, elementary school, San Diego Unified School District	ESEA Title I, Follow Through, Early Childhood Education Program	Negative	Teacher is at the core Teacher will do research with help
TEACHER C-3	B.A., Eastern Illinois M.A., Point Loma College	8 years teacher, elementary school, Illinois and Ind.; 6 years teacher, elementary school, San Diego Unified School District	Teacher in program for gifted students Conducted inservice workshops re gifted in San Diego and other school districts	Research is often biased.	Find answer to problems
TEACHER C-4	B.A., Univ. of California, Riverside	2 years teacher, elementary school, San Diego Unified School District	ESEA Title I, Follow Through, Early Childhood Education Program	Not useful	Help answer our questions
DIRECTOR OF INSERVICE EDUCATION	B.A., San Diego State Univ. M.A., San Diego State Univ. Currently enrolled in doctoral program University of Northern Arizona/ Point Loma College	4 1/2 years teacher, elementary school, San Diego Unified School District; 1 year coord. elementary summer schools, S.D.U.S.D.; 2 years coord ins. ed. S.D.U.S.D.; 6 years director ins. ed. S.D.U.S.D.	Numerous new programs Major emphasis on staff development to support innovation	Necessary Somewhat inefficient and isolated	Expedient resolution of educational problems Improved staff development activities

used a research finding in their professional work as teachers, evaluators, resouce teachers, etc.

Relative to IR&DT all the participants had an accurate perception of the strategy. However, the teachers and principals emphasized and limited their comments more to the problem solving aspects of the strategy than did the researcher, trainer/developer, or director of inservice education. They also tended to concentrate on the teacher's role on the team whereas the researcher and trainer/developer considered all the team roles. Transferability of IR&DT to ongoing activities in the school district was seen as an important payoff by most participants.

Comparing the California participants to what is known about successful implementation of innovations in education, several important positive factors were present.

Berman and McLaughlin (1978) indicated that the implementers should clearly understand the goals and precepts on which the innovation is based and have a climate of legitimacy and support established at the school level and school district central office. Emrick and Peterson (1978) further suggested that implementation will be more successful when the participants consider the new project to be in their own interest. All the California participants were able to describe the purpose of IR&DT and their individual roles in the implementation effort. The Director of Inservice Education for the school district and the School I principal considered their key role to be as facilitators and supporters of the effort. While the School II principal was less definite about serving the facilitator role, this was largely because she felt Teacher C-3 was experienced enough to handle the project on her own. All participants saw immediate payoff in the IR&DT project for themselves and for the school or school district.

In addition, the teachers appeared to have had the sort of experience in analyzing and structuring teaching to fit students' needs that Bussis, Chittenden and Amarel (1978) considered to be essential for "collaborative" teacher-researcher r and d.

Two characteristics of the team that may have been negative indicators were the concentration of their educational experience in institutions in the San Diego area and the years of experience of the teachers. The latter factor was noted because Berman and McLaughlin found implementation of innovations of the type they studied to be harder to accomplish the more years the participating teachers had taught.

Referring to other participant skills and perceptions mentioned in Chapter One of this report, all the teachers were accustomed to having visitors in their classrooms and all appeared to think they could help students learn. The researcher had had considerable experience carrying out evaluation studies that were classroom-based. He also saw teachers to be important members of a research team. On the other hand, his research training and experience had emphasized the use of quantitative methodology so he lacked some of the diversity of experience and training Miller (1977) suggested would be helpful to researchers who work in "natural" settings. The trainer/developer had the classroom experience and the experience in instructional design necessary for his role on the team. Given his work with inservice teacher education and parent education in areas as sensitive as sex education, he also was expected to be able to manage conflict situations and facilitate group interaction.

Thus, the California participants entered the IR&DT Study with a strong participant background and experience base.

Vermont Participants

The Vermont IR&DT team included a researcher, two trainer/developers, and three teachers. It is important to note that while two trainer/developers were involved, there was only one trainer/developer working with the team at any given time. The person who initially assumed the trainer/developer position participated from August through October 1977 at which time he resigned. The second trainer/developer was selected by the team and joined the IR&DT effort in mid-November 1977. She remained with the team through the completion of the IR&DT implementation effort. The background and perceptions of both individuals are presented here inasmuch as each may have influenced the Vermont implementation. Information also is provided regarding the researcher and teachers who served on the team.

In addition to the IR&DT team members, the superintendent of the Supervisory Union School District, the principal of School III, the acting dean of the College of Education and Social Services at the University of Vermont and the program chairman for the teaching-learning area in the college were involved with the IR&DT project in various ways. Some information regarding their views of educational research, in general, and IR&DT in particular are included in the discussion that follows.

Researcher. The Vermont researcher was a white male. He was separated from his wife. He had two children. He earned his B.A. degree from the University of Rochester and both his M.Ed. and Ph.D. at Syracuse University. In discussing his academic preparation, he indicated that it improved as he advanced from one degree to the next, possibly because he was increasing in maturity and because program flexibility increased.

Prior to 1977, the Vermont researcher had taught social studies, mathematics, and reading for two nonconsecutive years at the junior high school level. He had worked for one year in a multidisciplinary program for delinquent boys of junior high school age, and had worked on the development of the Syracuse Model Elementary Education Project for two years. He joined the faculty of the University of Vermont, College of Education and Social Services in 1970. In this position he helped design and worked in an innovative teacher training program that integrated methods courses into a concentrated time period. (As mentioned earlier, this was the program that won the national award from the American Association of Colleges of Teacher Education.) In his associate professor position, he advised students' independent study efforts, offered personal and academic counseling to students, and served on college and university committees as well as teaching courses in the teaching-learning area. Immediately prior to joining the IR&DT team (January-June 1977), he completed a six-month sabbatical leave which was spent at Far West Laboratory. During this time, he worked with the Laboratory staff of the IR&DT Program to acquire qualitative research skills and to gain knowledge of IR&DT.

In the Spring 1977 interview, the Vermont researcher stated that he read the Sunday edition of the New York Times, local newspapers and Psychology Today on a regular basis. His vocational interests included stamp collecting, paddle ball, skiing, and American history with a particular interest in tombstone rubbings.

When asked about educational research, per se, the Vermont researcher reported:

> In and of itself, educational research is a stimulating exercise of intellect. I am not convinced, by any stretch of the imagination, that most research efforts have had much positive payoff for school children or their teachers. In fact, the research methodologies that rely on positivist philosophies may have exerted negative influences in structuring supportive school situations for children. I am fascinated by the exercise of curiosity allowed for, or rather demanded by, true scientific research and am fulfilled by those moments

> when I can be part of such an effort. Unfortunately, most educational research seems to be less oriented towards finding out about the world and more oriented toward proving that such and such is so. This is not true research from my way of thinking.

In thinking about the types of research that were needed in education, the Vermont researcher's response was more "conceptual" than "practical." He believed there was a necessity to: (a) gather natural phenomenological descriptions of school life; (b) move away from "psychologizing" schools, teachers, and students; and (c) help teachers "see" better what it is that they are and do. He indicated that useful research was research that affected teaching, was credible to teachers, and was useful to students. He listed David Hunt, Jean Piaget, and Burton White as his research "heroes".

The Vermont researcher believed that teachers could do research. He was concerned that they would need time to do it. He speculated that it would be necessary to dispel the high status mythology surrounding the researcher role in order to help teachers enter the research arena. He was concerned about creating a "peer" group when the researcher and trainer/developer brought implicit, if not explicit, higher status to the team by virture of their affiliation with the university. He believed it would be a problem to get the teachers to confront one another when "difficulties" arose in team meetings.

In outlining the nature of the IR&DT project, the Vermont researcher specified the steps of identifying a problem, framing questions to get at the problem, collecting data to get at the problem, doing so in ways that did not interfere with the classroom environment, analyzing data, producing a research report, and developing a training program based on the research. He also indicated that all the participants should learn from their involvement in IR&DT and show growth in sensitivity to problems and to one another. He stated that each IR&DT team member should contribute to the research and development process with differing degrees of emphasis according to his or her skills. He indicated he had become involved in IR&DT as a "growth" experience. He saw the project as an opportunity to mix quantitative and qualitative research methodologies and he considered this "uniqueness" to be very intriguing.

In terms of payoff, the Vermont researcher hoped that the IR&DT project would give the College of Education and Social Services a systematic research focus which, in his opinion, currently was lacking. He further hoped that this new focus would help inform decision making about the college's elementary preservice teacher education program. He wanted IR&DT to "sensitize" the college staff to field-related issues and problems.

Trainer/developers. The initial trainer/developer on the Vermont IR&DT team was a white male. He was single. He had completed a B.A. and M.A. degree. At the time he joined the IR&DT team, he was a lecturer in educational foundations in the University of Vermont, College of Education and Social Services. In addition to teaching the foundations course, he also taught courses in reading methods to undergraduate students, supervised student teachers who were training to be elementary school teachers, and conducted inservice courses and workshops, primarily related to the teaching of reading, for school districts throughout Vermont on an occasional, by request basis. He continued these activities on a half-time basis while working on IR&DT. In this position he reported to the director of the teaching-learning program area and the acting dean of the college.

This Vermont trainer/developer's background was wide and varied. He had taught science at the high school level, served as Deputy Commissioner of Education for Vermont, held the position of Dean of Students at Champlain College, and acted as a basketball coach. Outside the formal education arena, he had been Director of the Vermont Community Action Council, taught electronics for the United States Army, and been employed as a securities broker.

When asked about his outside interests, the trainer/developer indicated that he enjoyed photography, writing, poetry, silver-smithing, and reading. He stated that he regularly read 16 popular journals and periodicals including ones devoted to national events, mechanical and electronic information, and entertainment.

In thinking retrospectively about his professional education, the Vermont trainer/developer noted that he was highly motivated to complete his undergraduate and Master's of Education degrees. However, following completion of the Master's, his desire to complete further degrees was destroyed.

Prior to beginning the IR&DT project, the initial trainer/developer on the Vermont team had done no research. During the Spring 1977 interview, he stated that it was needed but he had reservations about the situational specificity of much research and considered generalizability to be a problem. He indicated he frequently used research findings that were directly related to Maslow's theoretical work. He suggested that if research from other fields were adapted to education, there was a potential for important information to be obtained. Looking at teachers' involvement in research, he thought they could do it. He believed that participation in research could resolve teachers' needs for "greater professionalization and personal fulfillment."

Relative to the IR&DT project, the Vermont trainer/developer presumed the effort was a way to determine whether or not the strategy would make a difference in understanding the classroom and providing help for all learners in those classrooms. He believed that all school persons, including community members, probably would become involved before the completion of the project. He noted that he was interested in working with the team in order to learn about research methodology and to learn to write better. He was proud to be part of something "new and novel." He hoped the project would contribute to the decision making about the preservice elementary education program, both process and product, at the college and would introduce systematic research to the staff as well as the students at the college. He saw the distance between Far West Laboratory and Vermont as a problem that might slow down the team's progress when immediate answers to questions were needed. He wondered if the team would be task or process oriented.

As noted earlier, the initial Vermont trainer/developer remained with the IR&DT team only for August, September, and October 1977. In October, he resigned from the project. Chapter Four contains a discussion of the circumstances surrounding his resignation and the effects upon the team and the IR&DT process. The other team members spent approximately a month seeking a replacement. This included consultation with the acting dean of the College of Education and Social Services, team interviews and discussions with possible candidates, and Far West Laboratory staff meetings with the individual recommended by the team.

The second Vermont trainer/developer was acceptable to all the above individuals. She was a white female, divorced, with one child. She completed her undergraduate degree at Castleton State College, Vermont. Her Master's degree was in special education from University of Vermont. She had completed 30 hours beyond the Master's at University of Vermont and, at the time of the IR&DT project, was at the dissertation stage in a doctoral program at Boston University. Her doctoral work was in the area of systems development and adaptation with an emphasis on educational administration and leadership. Her dissertation used her insights as a participant observer in the IR&DT implementation as a focus.

The second Vermont trainer/developer had taught elementary school for five years in South Burlington, Vermont. She had taught in the special education program area of the University of Vermont, College of Education and Social Services since 1971. Much of her work at the college level had been in a "team" teaching mode. The approach used in her work was to cooperate with some twelve school districts located near the University to identify special education needs. The college then placed student teachers in the schools according to those needs. The trainer/developer supervised the student teachers. She also taught inservice courses for the teachers in the districts. During IR&DT implementation, she continued in this role half-time and was assigned to the IR&DT project half-time.

In discussing her avocational interests, the second trainer/developer indicated that she liked outdoor recreation, particularly skiing, riding, and hiking. However, with a full-time position at the college and her doctoral work she had had little time for such interests the past few years. Her professional life also was too "hectic" to allow time to read popular periodicals. She did read several professional journals regularly including Journal of Applied Behavior Analysis, Teaching Exceptional Children, and Journal of Special Education.

Prior to working with the Vermont IR&DT team, the second trainer/developer's research experience had been informal, largely in terms of material presented in graduate education courses or small scale inquiry-survey projects carried out for these courses. However, she noted that much of the internship experience she provided to the student teachers whom she supervised was built around hypothesis-testing activities. The preponderance of this used a quantitative treatment-control research approach. She had little, or no, experience with qualitative research methods.

Teachers. Three teachers served on the Vermont IR&DT team.

Teacher V-1 was a white female. She was single. At the time of the IR&DT project, she was teaching kindergarten in School III. She had been teaching for six years, all of which were at School III. She complete her undergraduate degree at University of Vermont. She reported that she had been involved in a few inservice education courses. She felt these courses generally were more useful to her as a teacher than her undergraduate training has been.

Teacher V-2 also was a white female. She was married and had three children. She taught first grade at School III. At the time she worked with IR&DT, she had had 12 years of teaching experience, some of which were in the Burlington, Vermont School district. She likewise had complete a B.S. degree. This was done at the University of Vermont. She, too, had taken few inservice education courses or workshops and had been involved in no advanced work beyond her undergraduate degree at the beginning of IR&DT.

Teacher V-3 was a white female. She was single. She was in her second year as a third grade teacher at School III during the IR&DT project. She completed her undergraduate degree at Vassar College and enrolled in a Master's program at the University of Vermont during the IR&DT effort. She reported infrequent attendance at inservice education courses or workshops, partly because few were offered, even though she had found her undergraduate preparation "not useful to teaching."

In terms of out-of-school interests, Teacher V-1 reported that she had no hobbies and read the local newspaper as a general information source. Teachers V-2 and V-3 also read the local newspaper. Teacher V-2 indicated she was a hockey fan and enjoyed riding horses.

None of the Vermont teachers had had experience with research activities before joining the IR&DT team. Relative to use of research findings in their teaching, Teacher V-3 stated that she had used findings from behavior modification with "difficult to reach" students. The others were not aware that they used such information. As to their impressions of educational research, the Vermont teachers had little to say. They either had no impression or a negative view. None of them had been involved in the design or implementation of an innovative educational program.

The Vermont teachers had a positive view of School III in terms of the support given them. They reported that they were not required to keep formal records of their own teaching or other professional activities. When they had problems, they generally consulted with one another or the school principal. Teacher V-3 stated that she had no one with whom to consult, and "that's why she joined the project."

Relative to their expectations for participation in the IR&DT project, the teachers stated the following, all of which emphasized the problem-solving aspects of the strategy.

Teacher V-1: "We will look at ourselves. We'll find a common problem and each work on it and hope to find a solution."

Teacher V-2: "The group will identify and work on common problems."

Teacher V-3: "It's a new way of doing research on research. Instead of having a detached observer do research, the problems of teachers are central."

When asked about personal payoff, the teachers noted that working with the project would be new and interesting and would help them to teach better or differently. As to difficulties the team might face, agreeing on a problem and making the problem fit into a research mode were mentioned.

Self-reports that were completed prior to implementing IR&DT identified some differences among the Vermont teachers. Observations in the teachers' classrooms also pointed out differences in their approaches to instruction although few "innovative" behaviors were observed. Table III-3 summarizes the self-report and observation data.

Teachers V-1 and V-3 appeared to utilize a more informal teaching style than Teacher V-2. Teacher V-2 emphasized the importance of teaching basic skills. She noted a lack of comfort in the open space environment. She taught reading in a conventional reading group mode but was frequently interrupted by children from outside the group. Each teacher mentioned teaching problems that were unique to her interests, which was an interesting situation given that the IR&DT team was expected to agree upon a problem to be the focus of their research and development effort. Textbooks, dittos, and other publisher produced materials served as the primary instructional materials.

Acting dean. The acting dean of the University of Vermont, College of Education and Social Services was a white male. He was married with three children. He completed his B.A. degree at New York State University at Brockport and his M.S. and Ed.D. degrees at University of Rochester, Rochester, New York. His Ed.D. focused on the area of curriculum and educational research.

The acting dean had seven years' public school experience. He served as a research associate and assistant professor at University of Rochester for six years. For six years he was an associate professor of education and Associate Director of Research and Development at Syracuse University. Prior to becoming acting dean in 1977 at University of Vermont, he held the associate dean and a professor of education position in the college for six years.

Table III - 3
Vermont IR&DT Teachers
Teaching Style and Classroom Environment

<table>
<tr><th>Teacher</th><th>V-1</th><th>V-2</th><th>V-3</th></tr>
<tr><td>SELF-REPORT OF TEACHING STYLE</td><td>"Haphazard," individualized, "no teachers' manuals," open and honest emotions with students</td><td>Whole group instruction, actress, skill oriented, few individualized areas, reading</td><td>Good behavior rewarded, students take responsibility for work, some behavior modification</td></tr>
<tr><td>TEACHING PROBLEMS</td><td>A few problems with parents</td><td>Open space not comfortable; grouping materials of instruction</td><td>Organization, reading instruction</td></tr>
<tr><td rowspan="2">OBSERVATION OF ENVIRONMENT</td><td rowspan="2">Not teaching at time of observation</td><td colspan="2">THESE TEACHERS SHARE OPEN SPACE WITH TWO OTHERS</td></tr>
<tr><td>Carpeted, bookshelves, tables, messy, conventional</td><td>Carpeted, grouped tables, many art materials, messy</td></tr>
<tr><td>OBSERVATION OF STYLE</td><td>"   "</td><td>Group reading, word recognition, students interrupt, positive student dependence on teacher</td><td>Informal, student projects, self-paced, positive, friendly, firm, accommodating</td></tr>
<tr><td>MATERIALS OF INSTRUCTION</td><td>"   "</td><td>Text, worksheets, phonics cards, number charts, dittos for coloring</td><td>Mostly teacher prepared, some texts, many trade books and magazines, artwork everywhere</td></tr>
</table>

As noted earlier, the acting dean had participated in several activities with the Far West Laboratory prior to the college's involvement with IR&DT. Thus he was somewhat knowledgeable about the purposes and essential features of the strategy. In the Spring 1977 interview, he indicated that he believed the approach to be a promising one but, possibly, not "as great as the staff at Far West Laboratory thought it to be." He wondered whether Far West Laboratory would allow the process to unfold as a consequence of the team members' interaction or would attempt to have the implementation match what "should happen." Despite these reservations, he believed the process, when worked through, would provide a needed research balance between conventional research on teaching and what might emerge from implementation of the IR&DT strategy.

The acting dean thought there was a potential payoff for the college from participation in the project. Because the college currently was involved in little research and the research that was conducted was principally theoretical, historical, or philosophical in nature, he thought IR&DT would provide staff and students with other attractive modes, principally school-based research.

Other persons who served as facilitators for the Vermont IR&DT team. Three other persons, while not heavily involved in IR&DT, were in positions that made their interest in and support of the IR&DT project important. These were the Teaching-Learning Area Program Chairman of the College of Education and Social Services, the Superintendent of the Supervisory Union School District, and the principal of School III. A discussion follows of their knowledge and perceptions of IR&DT.

Program chairman. The Teaching-Learning Area Program Chairman was a white male. In the Spring 1977 interview, he stated that he had had extensive collegial relations with the researcher on the Vermont IR&DT team and through him had learned of some of Far West Laboratory's activities including IR&DT. He also indicated that he knew little about the strategy beyond the fact that it was school-based and teachers and other school persons would be involved. He agreed with the acting dean that IR&DT would provide another option to the college staff and students in terms of how they could conduct research studies. He felt this would help move the college's research efforts from being reactive, e.g., conduct of evaluations and population projections, to moving directly and significantly into proactive work with schools.

District superintendent. The Superintendent of the Supervisory Union School District in which School III was located was a white male.

In thinking about involvement with the IR&DT effort, he raised issues relative to: (a) teachers being away from classes too often, (b) informing parents about the project, and (c) the word, "research." He indicated that, if possible, the word should be eliminated from public communications regarding the project since past experiences with psychological research had been viewed negatively by the community.

Relative to payoff, the superintendent stated that he was trading participation in the project for inservice education of the teachers.

School principal. The principal of School III was a white male. He served as both the Principal of the school and the fourth grade teacher. He saw no persistent problems that faced the staff of School III. He noted there was a persistent search for "the best approach to teaching basics to all of our students."

In the Spring 1977 interview, the principal indicated he read "quite a bit," particularly in the area of special education. He noted that this helped him with approaches to specific situations or problems with students. He used findings from studies of behavior modification with "children with behavior problems in the classroom." He had conducted no research himself and no research had been done in School III during his tenure there.

Relative to IR&DT, the principal thought the school's reward for participation would be that the teachers would learn about research methods which, in turn, would help them work with children more effectively. Although not involved as a team member, he hoped to develop a stronger background about research himself by having the teachers serve on the team. He saw his role in IR&DT to be "involvement through the teachers' participation." Since he saw every child and teacher as his concern, he was certain he would become involved in some way. He did not anticipate problems with the project.

Summary of Vermont team. Table III-4 summarizes the background and experience of the Vermont IR&DT team members and the Acting Dean of the College of Education and Social Services who offered considerable administrative assistance to the team.

Teacher V-3 was the only participant who had had less than five years' experience in the field of education. The other members had six or more years in the field and the researcher, the trainer/developers, and the acting dean had broad and varied experiences. The experience of the teachers and trainer/developers had been limited primarily to institutions within Vermont. The researcher and acting dean had worked in the up-state New York area as well.

For the most part, the team's experience with innovative educational programs was limited. The teachers had not been involved in educational innovations. The second trainer/developer, who served in the role for the major portion of IR&DT implementation, also had had no experience with innovative programs that were designed to meet federal or state categorial aid guidelines or underwent locally-funded formal design, testing, reporting, and revision procedures. The researcher and acting dean had participated in several

Table III - 4
Vermont IR&DT Participants
Educational Background and Experience

Participant	Education	Professional Experience	Innovative Ed. Program Experience	Views Regarding Ed. Research	Expectations for IR&DT
RESEARCHER	B.A., University of Rochester M.Ed., Syracuse Universisty Ph.D., Syracuse University	2 years junior high school teacher; 1 year teacher in program for delinquent boys; 2 years staff of model Elementary Education Project, Syracuse Univ.; 7 years Professor Univ. of Vermont College of Education	Model Elementary Education Project, Syracuse University Designed and implemented innovative teacher training program, University of Vermont	Stimulating Not much positive pay-off for students or teachers Useful research affects teaching, is credible to teachers, and is useful to students	Growth opportunity. Opportunity to mix quantitative and qualitative research methodology. Provide college of education a systematic research focus. Sensitize college staff to field-related issues and problems.
TRAINER/ DEVELOPER (initial)	B.A. M.A.	High school science teacher; Deputy Commissioner of Edducation, VT; Dean of Students, Champlain College; basketball coach; Director of Vermont Community Action Council; Instructor in U.S. Army; securities broker; lecturer, U. of VT	Involved as staff member of several innovative educational projects	Research is needed but is too situationally specific. Need to apply research from other fields to education	Determine whether strategy made a difference in understanding the classroom and helping learners in those classrooms. Would help him acquire research skills. Contribute to decision-making about preservice elementary education program.
TRAINER/ DEVELOPER (second)	B.S., Castleton State College, Vermont M.A., University of Vermont	5 years elementary teacher, South Burlington, Vermont; 6 years Instructor, Univ. of Vermont, College of Education	No involvement in development and testing of "formalized" innovation	No information available	No information available
TEACHER V-1	B.S., University of Vermont	6 years elementary teacher, Underhill Independent School District	No involvement with "formalized" innovations	No impressions	Look at selves, find a common problem and a solution to it
TEACHER V-2	B.S., University of Vermont	12 years elementary teacher, Underhill School District and Burlington School District	No involvement with "formalized" innovations	No impressions	Identify and work on common problems
TEACHER V-3	B.A., Vassar College	2 years elementary teacher, Underhill Independent School District	No involvement with "formalized" innovations	No impressions	Problems of teachers are central
ACTING DEAN, UNIVERSITY OF VERMONT, COLLEGE OF EDUCATION AND SOCIAL SERVICES	B.A., New York State University, Brockport M.S., University of Rochester, NY Ed.D., University of Rochester, NY	7 yrs. public school experience; 6 years research associate and assistant professor, Univ. of Rochester; 6 yrs. associate prof., Associate Director of Research and Development, Syracuse University; 6 years, professor and associate dean, Univ. of Vermont	Work with a variety of innovative programs.	No information available	Provide college of education staff and students with school-based research modes

innovative efforts, all in the area of teacher training.

Most of the participants, including the researcher, had had limited experience with educational research. This may be explained partly by the general lack of research activities and the emphasis on preservice teacher training at the University of Vermont. It is interesting to recall that the researcher spent his sabbatical leave at Far West Laboratory in order to become acquainted with qualitative research methodology. However, because ongoing research at the laboratory had reached the point of data interpretation and report writing, the researcher was unable to actually participate in the design and conduct of such research or the analysis of such data. Thus, his experience was limited to learning about qualitative research methods.

The participants' views of educational research differed considerably depending upon who was responding. The researcher felt it was a stimulating endeavor. Both the researcher and trainer/developer were pessimistic regarding the use of research findings. The teachers had no impressions or, when comments were made, had negative reactions.

Relative to IR&DT all the participants saw the strategy as having a problem-solving emphasis. The researcher outlined what was to be done in considerable detail. The other participants had a general knowledge of the strategy but did not discuss specific tasks to be completed. All participants saw a payoff for them, as individuals, from participation in IR&DT. The researcher, the initial trainer/developer, and the acting dean also saw a payoff for the College of Education and Social Services, particularly in terms of introducing an alternative research approach to the staff and students.

When the Vermont IR&DT team is compared with factors considered important for successful educational innovation and the skill and experience requirements outlined for IR&DT, some weaknesses appear to exist.

While the team members were clear that IR&DT had a problem solving focus, only the researcher spoke precisely about the goals and processes of the implementation. Thus, clear understanding of the innovation identified as important by Berman and McLaughlin (1978) may not have existed at the beginning of the implementation effort.

Further, the acting dean, the school superintendent and school principal were favorable toward IR&DT and saw worthwhile payoffs for their respective institutions. However, the superintendent and dean also expressed reservations about the strategy and neither the superintendent nor the principal outlined a specific facilitative role for himself. This, in turn, raises questions regarding the central office (administration) climate of support and legitimacy for the project.

On the other hand, the researcher, both trainer/developers, and the teachers saw the project as having payoff for themselves, as individuals, which is an important antecedent to successful implementation of an educational innovation.

Relative to skills and experience, the Vermont teachers had not had the experience with implementing and evaluating innovative educational programs, with analyzing their own instructional programs, and with formalized collegial planning considered important for productive teacher participation in IR&DT (see discussion in Chapter One). The researcher had limited research experience although he had recently acquired some knowledge of qualitative research methodology. The trainer/developers had the classroom experience considered important for IR&DT and had developed and carried out a variety of teacher training efforts associated with their university responsibilities but had not participated in formalized development and testing of a training program.

Therefore, the Vermont participants entered the IR&DT Study with what might be described as minimally appropriate preparation for the roles they were to undertake.

Summary

As described in this chapter, differences existed in the characteristics of the two IR&DT sites and the skills and experience of the individuals who participated. In some instances, such as geographic locations and institutional configurations, the differences were planned. In others, e.g., participant characteristics, the differences were attendent upon those persons who volunteered and were selected to serve on the IR&DT teams. Since different recruitment procedures were utilized in California and Vermont, some differences in participant capabilities may, indirectly, have resulted from the criteria, perceptions, etc. applied at the time participants were selected. Others may be associated with the array of experiences available to persons who are located in urban as compared with rural educational settings. Regardless, IR&DT was implemented at the two sites by persons with different skill and experience backgrounds, with different institutional support bases, and with different personal/institutional goals for the project. The chapters that follow discuss what occurred as a result of implementing IR&DT in these two different situations.

CHAPTER FOUR

IR&DT IMPLEMENTATION

The purpose of this chapter is to present findings regarding the degree to which the California and Vermont teams achieved the essential features of IR&DT as they worked through the implementation of the strategy at their respective sites and to describe the technical assistance provided to the teams by Far West Laboratory staff and a National Advisory Panel comprised of a teacher, a researcher and two trainer/developer/researchers. Information is presented regarding the interactions of team members during formal team meetings and the types of technical assistance that were offered. In addition, because IR&DT implementation began at an orientation session with each team, the presentation of findings begins with a discussion of these sessions.

Orientation to IR&DT

Subsequent to the selection of IR&DT team members and prior to the beginning of the implementation period, Far West Laboratory carried out a three-day orientation session at each site. These orientation meetings were held away from the members' workplaces: a skiing lodge in Vermont and a waterfront hotel in San Diego.

Approximately four weeks before the orientation sessions, to acquaint them with IR&DT and r and d on teaching in general, IR&DT team members were sent sets of materials. Included in each set were Life in Classrooms by Philip W. Jackson, a copy of the Far West Laboratory Project Plan which described in some detail the rationale for and intentions of IR&DT, and three questionnaires (see Appendix C) to be used in the study of IR&DT implementation.

The procedures for each orientation were similar, if not exactly the same. For both orientation sessions, the objectives and related materials and activities were the following:

Objective	Materials	Activities
To introduce Far West Laboratory staff assigned to the IR&DT Study	None	Self-introductions
To collect data regarding IR&DT team members' knowledge, skills, and understanding of r and d	Questionnaires	Instrument administration
To present the rationale for IR&DT	None	Lecture, discussions, questions and answers
To introduce procedures for IR&DT participants' input for implementation study	Study materials (see Chapter Two)	Explanation of procedures, questions and answers
To recall the eight steps usually carried out in a research study	Summary of research steps (see subsequent sections of this chapter)	Lecture, discussion
To begin the process of developing a personal role description related to enacting IR&DT	Summary of research steps	Lecture, discussion
To begin the process of developing a team lexicon of r and d language	Summary of research steps	Lecture, discussion
To understand four modes of conducting research on teaching	Summaries and descriptions of completed research projects	Lecture, discussion
To understand the differences and similarities between/among the four modes noted above	Same as above	Same as above
To evaluate the consequences of using the four modes of research on teaching	Same as above	Same as above
To apply one's own knowledge/skill to each of the four modes of research on teaching	Same as above	Same as above

Objective	Materials	Activities
To specify one's own role/responsibilities for participation in each of the four modes of research on teaching	Participant-prepared role descriptions tape recorder, participant-prepared lexicon	Team meets alone, recording the meeting for informal analysis by Far West Laboratory staff
To begin the process of identifying a question/problem for IR&DT research	Participants' notes and previously distributed materials	Team works alone with Laboratory staff observing and responding to requests for technical assistance
To set a preliminary schedule for team activities and meetings	School and personal calendars	Team discussion
To establish communication procedures between team, Far West Laboratory staff, and others, e.g. persons in local sites	None	Discussion
To set the charge regarding IR&DT tasks as specified by subcontract	Scope of work statement for first subcontract	Discussion

As illustrated by the objectives listed above, the intent of the orientation sessions was to (1) introduce the team members to various research paradigms, (2) inform the team members of their roles regarding IR&DT implementation, (3) explain the data collection procedures to be used to study the manner in which each team went about IR&DT implementation, and (4) explain the fiscal, interinstitutional, and other procedures for communication related to administration of the project.

Far West Laboratory participants in the orientation sessions were the two principal investigators of the IR&DT project, William J. Tikunoff and Beatrice Ward, and the director of the study of IR&DT implementation, Gary A. Griffin. Except for the session in which the IR&DT team members began to interact together and speculate upon research issues which were of interest to them, the principal investigators were in charge of the orientation sessions. The director of the study of IR&DT implementation served principally as an observer except for the session in which he explained the data collection procedures to be used with the teams. (See Chapter Two for discussion of these procedures.)

At the conclusion of the orientation sessions, team members at both sites were asked to respond to an open-ended questionnaire which focused upon most of the orientation objectives and activities noted above. They were asked to indicate what was learned and how satisfied they were with these outcomes. The succeeding paragraphs summarize their responses.

When asked what was learned about IR&DT generally, respondents consistently reiterated the purposes and procedures explained during the orientation sessions. In both sites there appeared to be a clear understanding of the unique nature of the IR&DT process, with particular emphasis upon the role of the teacher in the question identification stage of the research. There were no instances of dissatisfaction with the ideas which were presented as being fundamental to IR&DT and only one person, the initial trainer/developer from the Vermont team, suggested that he had not learned as much as he had wanted to.

When asked about what had been learned regarding the research steps that were outlined at the session (these steps are delimited in the next section of this chapter), respondents indicated they had learned the steps at least nominally and were satisfied that they would be able to use the steps as guidelines for making decisions about the research to be conducted. There were no instances of disagreement with or modifications of these research steps.

Respondents were asked about the research reports which were used to illustrate the four research paradigms which were presented. With two exceptions (one Vermont teacher and one California teacher), the research reports were viewed as helpful and as illuminating ways to examine research. The two persons taking exception to this positive view of the illustrative research reports found them confusing and overwhelming. All participants believed the examination of the reports would eventually prove useful to the teams.

Regarding the informal meetings that occurred among team members and Far West Laboratory staff, the respondents, to a person, expressed enthusiasm for teammates and for the Laboratory personnel. This enthusiasm ranged from personal expressions of warmth and comraderie to ones which focused upon the potential contributions which could be made to the IR&DT process by the various persons. There were no discernable differences in these views when the Vermont and California teams' responses were examined separately.

Team members also were asked about their views of the team discussions (apart from Laboratory staff particiation). This item produced two different types of response. The California team concentrated upon the ability and expertise of the team members. That is, they acknowledged that each member would bring good intentions and well-developed skills to the process. The Vermont team, with one exception, responded in more personal ways. They indicated that the team discussions demonstrated that the team members appeared to like one another and began to get along well together. One Vermont teacher noted that she was impressed with the way the team could approach tasks intellectually. The difference between the two teams at this initial meeting, then, was that the California team concentrated its views of the team upon the skills and abilities of team members and the Vermont team concentrated its views upon the personal characteristics of team members and the ways in which they interacted at a social rather than a professional level.

When the IR&DT participants were asked about the team's discussion of roles and responsibilities, both groups indicated a basic understanding of the ways each member would be expected to participate in the IR&DT effort to the extent of his or her skill and knowledge. That is, each team member was able to describe, in some broadly conceived way, his or her own role and the roles of others. These descriptions were consonant with the expectations introduced during orientation by the Far West Laboratory staff.

The differences noted in the responses regarding initial team discussions were repeated when the teams were asked what they would tell their team colleagues if they could tell them anything they wished at this point. The California responses were of a task-oriented nature, "Problem identification will be difficult," "I'll help all I can," and so on, whereas the Vermont team concentrated upon responses which illustrated their beliefs that the members were open, friendly, and compatible. For each team, one teacher did not respond to this item.

Several items asked the respondents what they believed their own contributions to IR&DT would be and what their strengths and weaknesses would be in relation to IR&DT as they understood it at this point. To a person, the teachers on both teams expressed some doubt as to research skill and knowledge. As strengths, teachers responded that their understanding of teaching and their enactment of the role of teacher would be major strengths for the teams. The researchers and trainer/developers concentrated their responses upon specific research and development skills (methodological, procedural, and so on) and their weaknesses on lack of specific understanding of primary level classrooms, kindergarten through third grade, which were the workplaces of the teacher members of the teams.

Respondents also were asked what problems they could foresee as IR&DT moved forward. There was no persistent pattern to these responses. Four persons (two from Vermont and two from California) noted that the identification of an issue to be studied would be difficult and two persons (one from each team) noted the apparent demands of the timeline of expectations established by Far West Laboratory. Other responses included difficulty of decision making, distance between the Laboratory and the site , and how to find convenient times for team meetings. Some participants foresaw no problems.

Finally, the team members were asked to predict what benefits they and their workplaces would gain as a consequence of their participation in IR&DT. Without exception, the responses were that participation would increase their own skill and knowledge levels regarding research and development. Also, two teachers noted that participation in IR&DT would add to their repertoire of teaching skills.

As noted above, during orientation the teams met as a group without Far West Laboratory staff. The purpose of this meeting was to discuss how the members conceptualized their specific roles in the IR&DT process and to begin work on procedures which would result in a lexicon of r and d language which, it was believed, would contribute to team deliberations as the implementation proceeded. These meetings were audio-taped, with the team members' consent, and were reviewed immediately following the meeting by the director of the implementation study. The recordings of team member verbal interactions were examined for attention to task, degree of positive affect among members, and relative level of understanding of the content of the orientation sessions. This "informal" examination revealed that both teams appeared to have members who regarded one another positively, that attention to task was high for California and satisfactory for Vermont, that the Vermont team was more personal in its talk than the California team, and that both teams appeared to have a reasonable understanding of the research issues that had been presented by Far West Laboratory staff given the time constraints of the orientation session. At that time the responses given by the Vermont trainer/developer suggested that he was confused about his own role. The confusion centered around the issue of who was to be helped as a consequence of the team's research and development, teacher members of the team or other teachers. Subsequent to the orientation meeting in which this problem first appeared, Far West Laboratory staff met with the Vermont team collectively and the trainer/developer individually to attempt clarification of the issue. However, the issue persisted for the original Vermont trainer/developer until his resignation from the team on October 27, 1977, three months after the beginning of the implementation period.

From observation, examination of questionnaire responses, and analysis of the audiorecordings of the team meetings held during orientation, it was believed that the orientation sessions accomplished the specified objectives. Further, it was believed that team members entered IR&DT implementation enthusiastically and positively disposed to the expectations embodied in the strategy.

Team Member Interactions

A major task of the IR&DT teams was the identification of a problem/question of concern to teachers and the formulation and conduct of a research study designed to inquire into those aspects of teaching and learning related to that problem. Subsumed under this general rubric were eight research steps which were considered to be essential to the effective design and conduct of the research. The steps were introduced during the orientation session and included (1) identification of the issue to be studied, (2) selection of research strategies, (3) determination of the nature of data to be collected, (4) selection of data collection procedures, (5) preparation of the research design in the form of a written statement, (6) data collection, (7) data analysis, and (8) development of conclusions to be reported. In addition, the IR&DT teams were expected to develop a teacher education strategy (program) based on their research findings and/or the procedures used in the research phase of their work. In contrast to the research phase, the development phase of IR&DT was not segmented into specific activities for orientation purposes or for studying the IR&DT implementation process at each site.

The report of team member interactions that follows discusses how each member participated in IR&DT at each phase of the implementation process. For each of the discrete research steps, certain behaviors of team members were considered to be desirable. The same was true of the development effort. That is, teachers, researchers, and trainer/developers were believed to have unique perspectives on teaching and unique skills related to r and d which, if and when demonstrated, would contribute to the quality and type of r and d in which the teams chose to engage. The degree to which these speculations about role contribution were verified during the implementation will be considered in the following discussion. As the findings are presented, it will be noted that the IR&DT teams' work toward development of their teacher training products was less specific regarding procedural steps than for the research. This lack of demarcation in the development effort should not lead to the conclusion that this aspect of the work was less disciplined, only that it was viewed as a single, large task by the teams, which in turn, may have been the result of the more generalized description of IR&DT development as compared with the research steps prepared by Far West Laboratory and shared with the teams.

The methodology used to obtain the data regarding team member interactions was discussed in Chapter Two of this report. As noted there, the primary data source was audiotape recordings of all team meetings. Eighty-five hours of formal team meeting time were monitored for each site. This represents more than two-thirds of the total formal meeting time for the California team and approximately half the formal meeting time for the Vermont team. The data summaries and graphs presented in this section of the report represent the topics discussed and who was involved in the discussions. They do not report the length of time each team devoted to each topic. While it may be desirable at some future date to determine the exact amount of time given to specific topics or issues by each team, such analysis was not conducted for this report inasmuch as the primary areas of interest were the extent to which team members carried out the hypothesized roles and responsibilities and achieved parity in decision-making.

The discussion that follows of IR&DT team member interactions is organized around (a) overall parity of team members, (b) parity of team members in relation to the r and d steps carried out by the teams, (c) the nature of interaction in relation to the research steps and to non-research activities, (d) the sequence of attention to r and d activities, (e) the role contributions to the research steps and development activities, and (f) conclusions related to IR&DT team interactions.

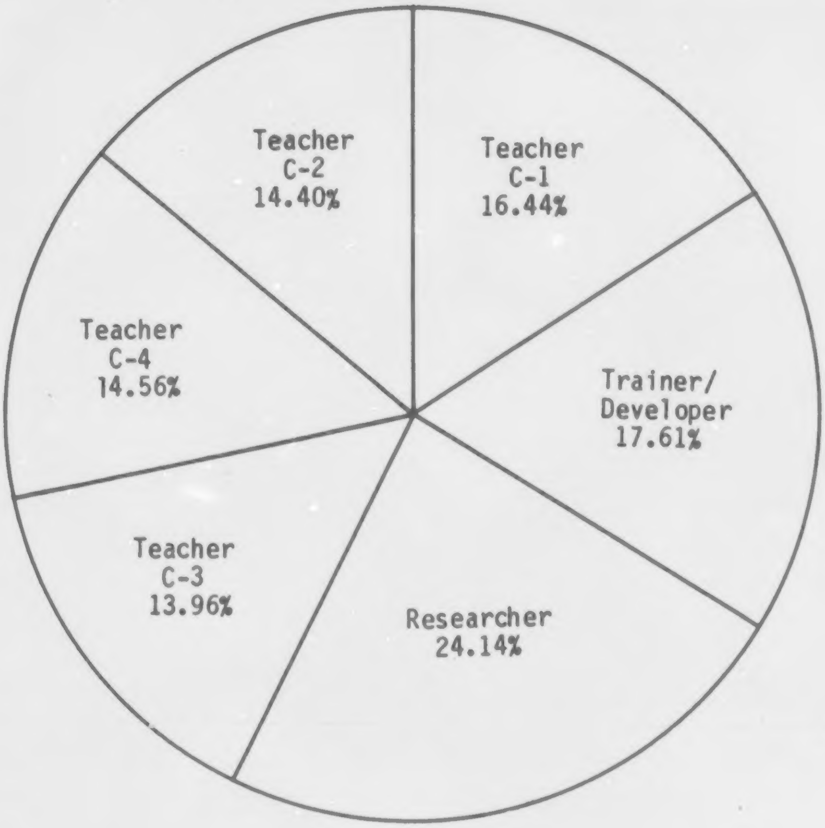
Overall Parity of Team Members

Early in the planning of the implementation of IR&DT, it was considered important to investigate the possible relation of professional roles held by team members with the degree of participation in the teams' work. Past experience and conventional wisdom suggested that teachers, elementary level teachers in this instance, might be overpowered in both discussion and action by the often-assumed higher status of an educational researcher or trainer/developer. For this reason and because it was considered important to have a wide variety of teaching perspectives upon which the teams could draw, three teachers were included on the Vermont team and four on the California team, whereas only one researcher and one trainer/developer served on each team. The degree to which team members, regardless of professional role, were each able to command the attention of the team to which they belonged is referred to in this report as parity. As noted in Chapter One, achieving parity in decision-making is an essential feature of IR&DT.

The California team's 85 hours of discussion indicated that there was relatively little difference between teachers in terms of their ability to gain the attention of the group as measured by who engaged in the talk segments that were monitored (see Figure IV-1). Those small differences that did occur are not considered to be significant or important in terms of parity. Also, the trainer/developer on the California team, although apparently commanding the floor with somewhat more frequency than the teachers, was not dramatically more prominent as a participant than each individual teacher. The principal difference in terms of participation among team members occurred when the researcher's contribution to the meetings was considered. In Figure IV-1, it can be seen that he was a much more prominent figure in the discussions than any other member of the team.

Further analysis of the summaries of the meetings revealed that this greater participation on the part of the researcher could be traced to two sources. First, it was to be expected and, in fact, it happened that the researcher had the most substantive and methodological research knowledge and skill on the team. During the early stages of IR&DT, his expertise was in both explicit and implicit demand by other team members in order to accomplish the tasks leading to the production of the research design. As a result, the California researcher played a central role in the further orientation of the other team members toward greater understanding of the research process. Second, the California researcher assumed the role of chairperson of many of the team meetings and, as such, engaged in both agenda-setting and summarizing activites. Thus, the

Figure IV - 1
Overall Degree of Parity of Participation
For the California IR&DT Team During Implementation of IR&DT



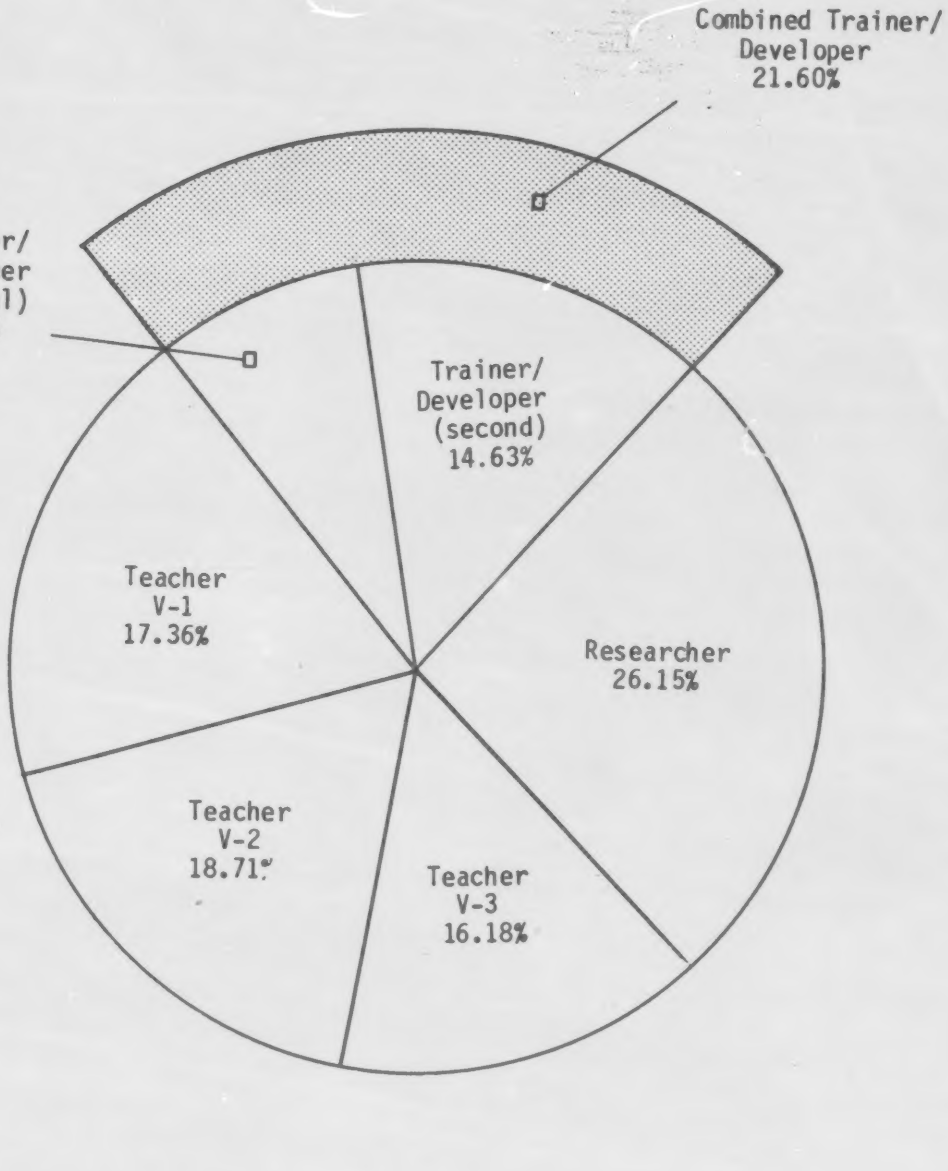
greater percentage of talk displayed by the researcher can be attributed to (1) communication of research skill and knowledge and (2) group process and procedural talk associated with assumed group leadership.

From these data, it can be concluded that the California team members enjoyed parity in the team meetings in that the difference in the researcher's contribution arose from necessary and appropriate leadership functions for successful completion of the team's r and d activites.

At the Vermont site, conclusions similar to those noted for the California team also apply (see Figure IV-2). That is, the teachers' pariticipation in team meetings was approximately equal, the trainer/developers in combination exhibited somewhat greater participation than the individual teachers, and the researcher participated most frequently. As will be noted in Figure IV-2, it was necessary to look at the Vermont trainer/developer role as carried out by the two persons who held the position. The initial Vermont trainer/developer resigned approximately two months after the start of the process and was replaced by another in mid-November, 1977. The percent of talk of both trainer/developers is reported separately and in total according to role.

As with the California team, the Vermont researcher appeared to contribute and participate in more team discussion topics than other members of the team, although the difference was less pronounced than for the California researcher. The sources of the researcher's greater participation in terms of the topics under discussion also were different from those of the California researcher. For the Vermont researcher, research-specific knowledge and skill accounted for less and talk related to the team's group procedures and organization accounted for more of his higher level of participation. The Vermont researcher also engaged in far more talk of an IR&DT-irrelevant nature and talk about Far West Laboratory, per se, than did the California researcher.

Figure IV - 2
Overall Degree of Parity of Participation
For the Vermont IR&DT Team During Implementation of IR&DT



In terms of overall parity of participation in team meetings, it can be concluded that (1) teachers on both teams gained teammates' attention to an approximately equal degree, (2) trainer/developers participated somewhat more than individual teachers, (3) researchers participated more than any role member on either team, (4) when all teacher members on each team were considered together they accounted for more than half the team talk during the formal meetings that were analyzed, (5) the California researcher's greater participation level can be attributed to his contribution of research knowledge and group process requisites, and (6) the Vermont researcher's greater participation can be attributed somewhat to his contribution of research knowledge (though at a lower level than the California researcher) but more to participation in group procedures talk and IR&DT-irrelevant talk.

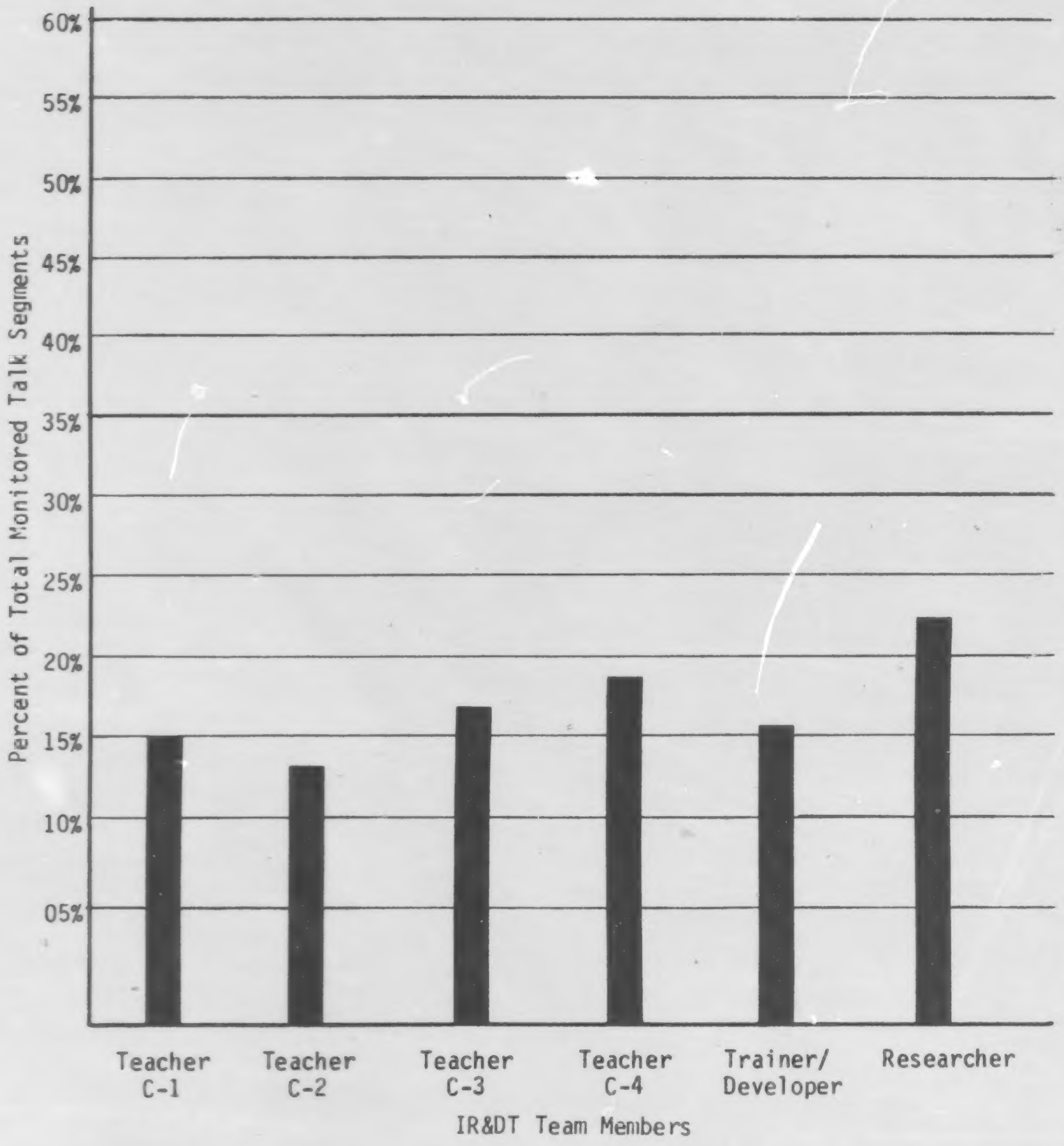
Parity of Team Members in Relation to the Research Steps

While concern for team member parity covered the entire period of time during which the two IR&DT teams engaged in their IR&DT efforts, the degree to which members of the two teams participated in deliberations specifically related to the eight research steps also was of interest. These data are reported in the following discussion.

An essential feature of IR&DT is the requirement that teacher members of an IR&DT team participate extensively in the generation of the issue or question to be studied. It was hypothesized that such participation, if demonstrated, would ensure that the research would be credible to other teachers and would be more closely aligned with the complex world of teaching than is research that is planned and conducted by educational researchers often in laboratory or other isolated settings that are apart from the "real" world of the teacher.

Figure IV-3 displays the percentage of talk segments attributed to each California IR&DT team member during the identification of their research

Figure IV - 3
Participation of California IR&DT Team Members
in Identification of Research Question



question. Teacher participation by individuals was about the same as it was in the total implementation effort, with somewhat more participation by Teachers C-3 and C-4. The trainer/developer participated to about the same extent as the individual teachers. The researcher, however, participated about one-fourth again as often as the individual teachers and trainer/developer.

Given the rationale for including multiple teachers on the team which was a belief that a "teacher perspective" was important to the design of a study of teaching, it is reasonable to consider the team members' contributions by professional role as well as individually. Figure IV-4 illustrates a dramatically greater participation by the teacher role than either the trainer/developer or the researcher role on the California team. Over 60 percent of the coded segments of team meeting talk related to question identification were attributed to those enacting the teacher role on the team.

Figure IV-5 presents the degree of participation in discussion related to identification of the research question by the Vermont IR&DT team members. Teacher participation on this team shows a variation not seen in the California team. That is, one teacher (Teacher V-2) who was the most experienced teacher on the Vermont team participated more than the other teachers to a degree not found on the California team.

For purposes of comparison in reading Figures IV-3 and IV-5, it should be remembered that there will appear to be higher percentages of participation for each Vermont team member by virtue of there being one fewer member than on the California team. It is not appropriate to compare individual participation scores from team to team for this reason.

The Vermont trainer/developer who participated in the first stages of the project participated at about the same level as the two teachers with the

Figure IV - 4
Participation of California IR&DT Team Members
According to Role in Identification of Research Question

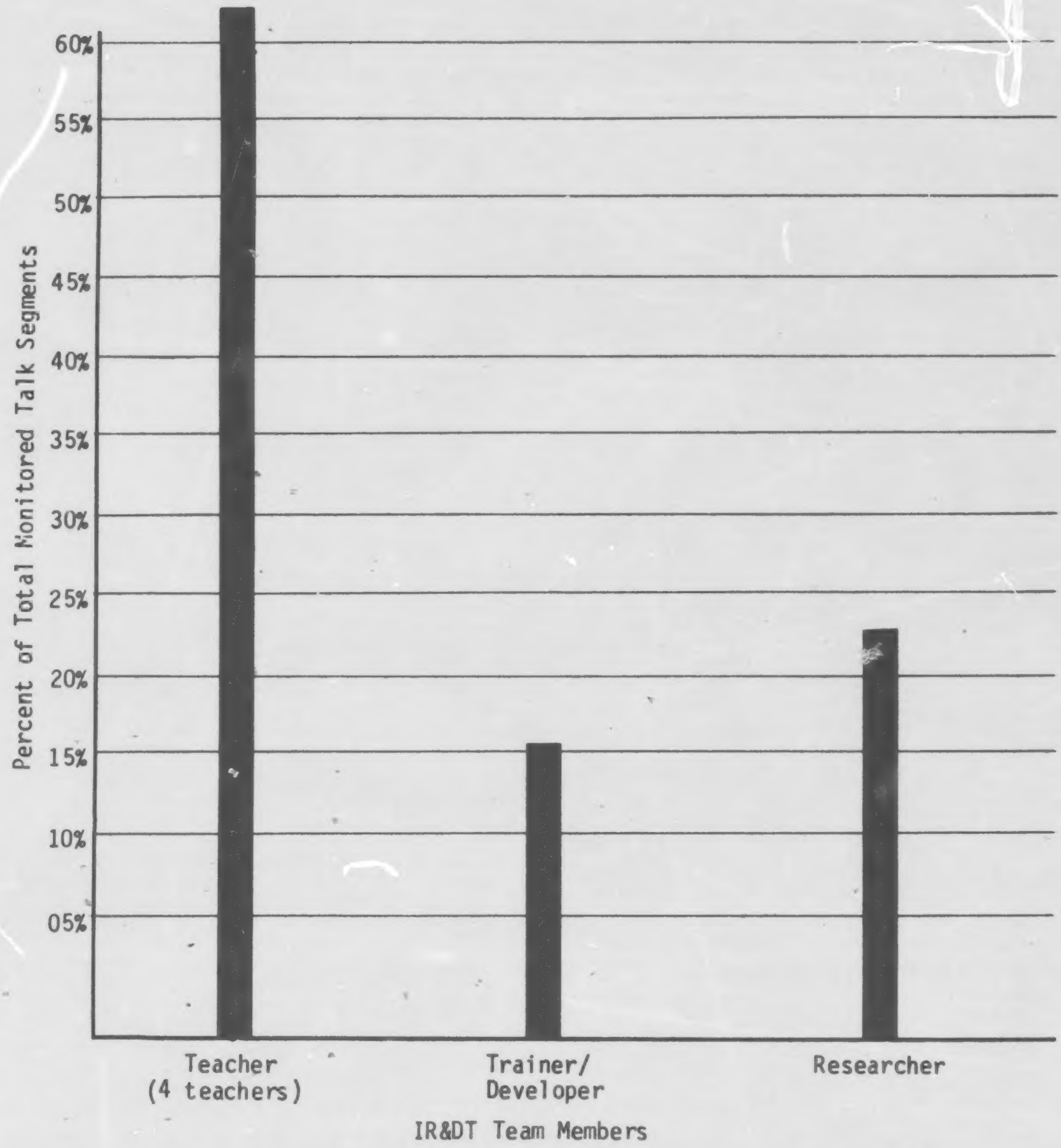
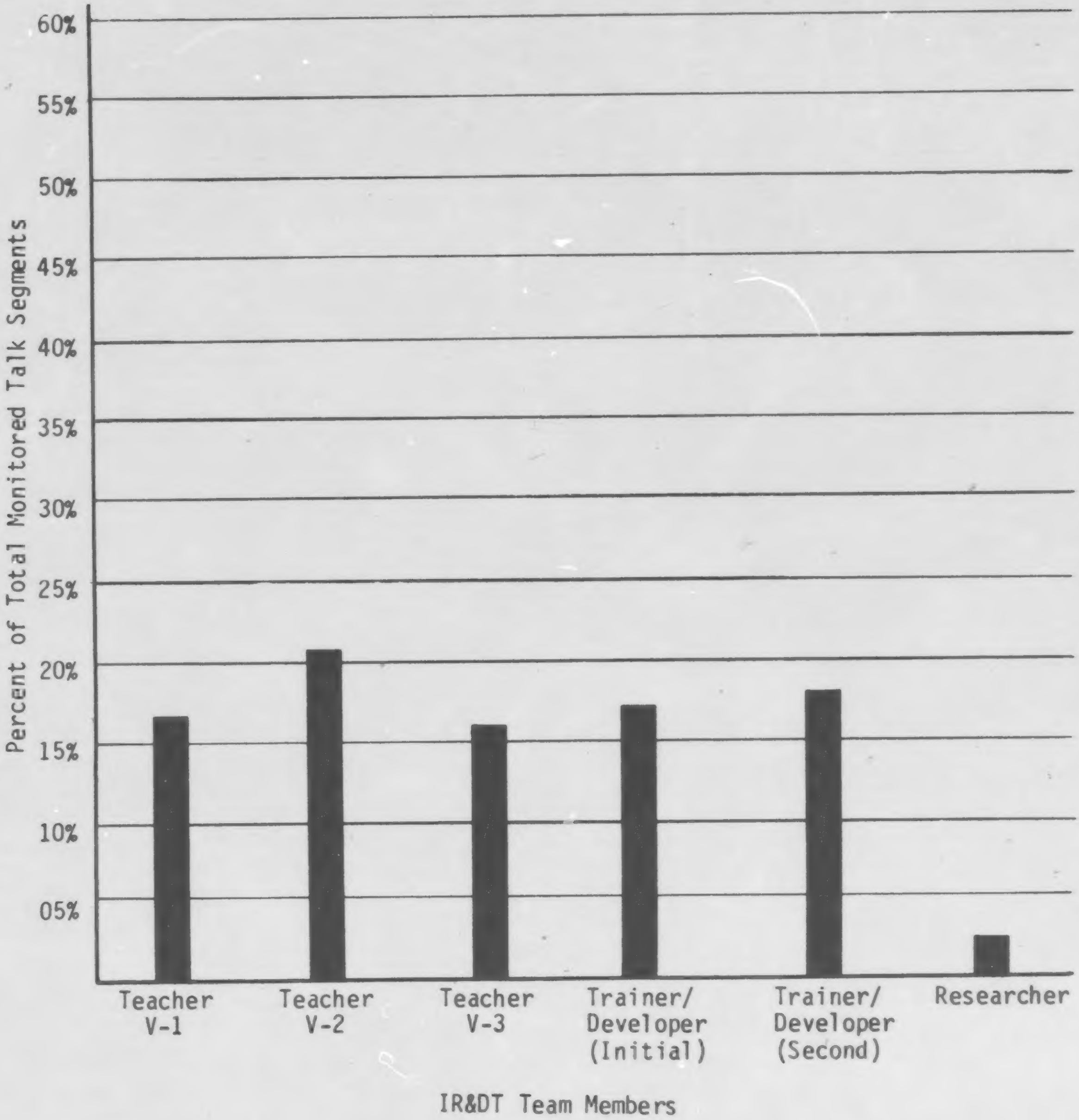


Figure IV - 5
Participation of Vermont IR&DT Team Members
in Identification of Research Question



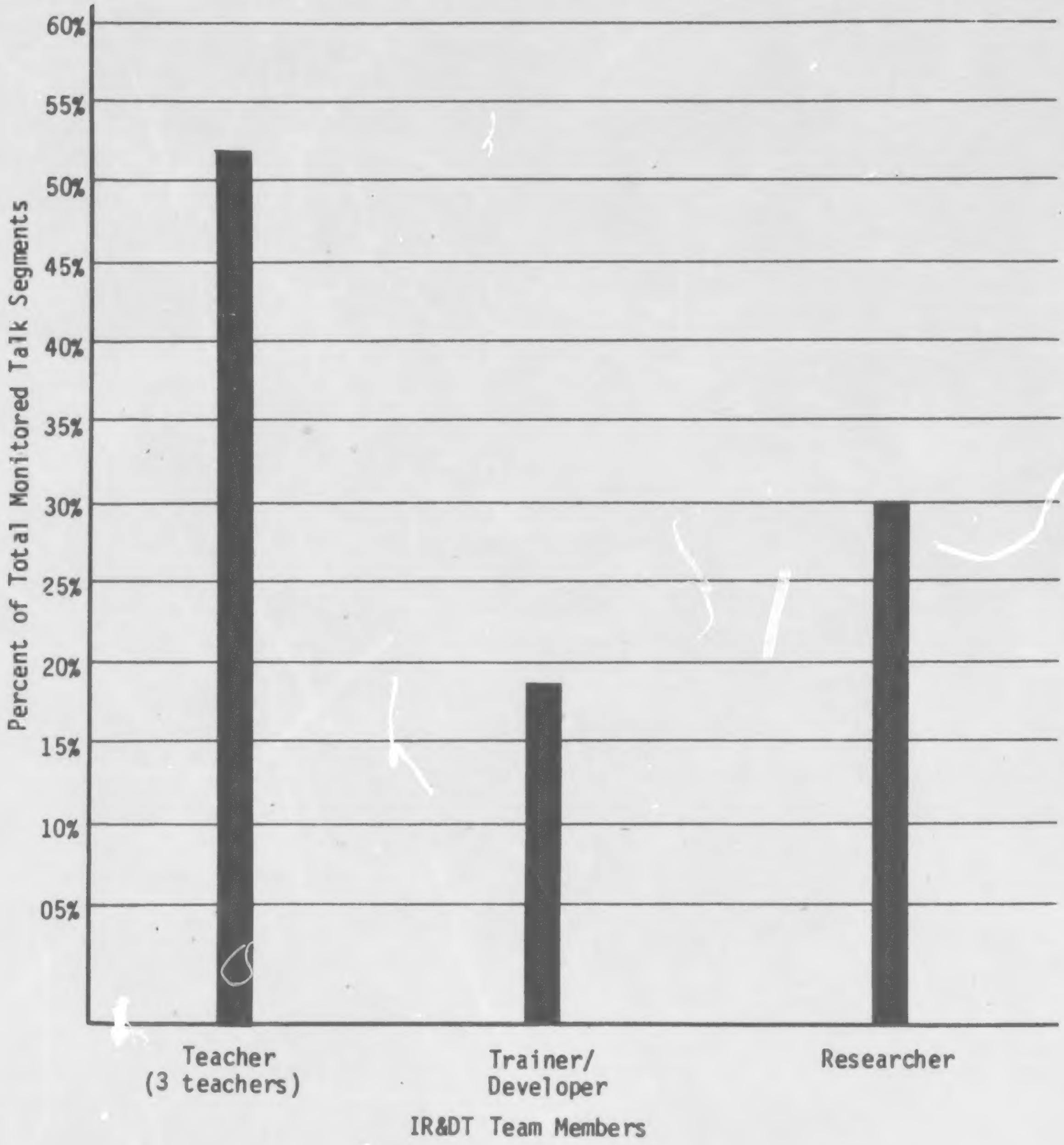
lower participation levels. The researcher displayed a higher level of participation than anyone else on the team.

To determine which role group participated most in the research question identification, the Vermont team members' participation levels were combined according to role in the same fashion as were those of the California team members. Figure IV-6 shows that more than half the contributions to the discussion of the issue to be researched were made by the teacher members of the team. The researcher's participation percentage was slightly more than 30 percent and the trainer/developer's about 16 percent.

Moving to selection of research strategies through preparation of the research design, the actual amount of team discussion decreased dramatically from that during question identification. Neither team devoted extensive discussion to selection of the research strategy. There appeared to be an early consensus on each team that the research strategy would be some variation of a naturalistic research mode with, perhaps, portions of the collected data subjected to quantitative analysis. As was true for question identification, the researchers on the two teams participated more extensively in selection of the research strategy than other members of the teams. There was little variation in participation among other team members.

When one considers participation in decisions regarding the nature of the data to be collected, selection of data collection procedures, and preparation of the research design, the teams differed. The California team showed a more consistent pattern of discussion of these steps than the Vermont team. (This issue will be treated again later in this chapter.) Although both researchers once again participated at a higher level than other team members, the California teachers and trainer/developer participated in the discussions of these three steps much more in terms of frequency of contribution than did the Vermont

Figure IV - 6
Participation of Vermont IR&DT Team Members
According to Role in Identification of Research Question



teachers and trainer/developer. These frequencies, as opposed to percentage of team talk ascribed to individuals, reveal that the California team was much more persistent than the Vermont team in the pursuit of understanding and skill related to data collection procedures, data sources, and the preparation of the research design.

When participation by members of each team is examined in terms of all team meeting activities from identification of the research question through development of conclusions to be reported, there was relative equality of teachers and trainer/developer on the California team in terms of having the attention of the group during these discussions (see Figure IV-7). As with the individual research steps, overall, the researcher participated at a higher level than any other team member when the members were considered as individuals. A composite of the teachers' participation, however, would show that the teacher role group in total participated at a much higher level than those indviduals assuming the researcher and trainer/developer roles.

Figure IV-8 illustrates the participation of individual members of the Vermont team throughout the entire IR&DT implementation effort. As with California, teacher participation was about equal across the role. Due to the fact that two persons took the trainer/developer role on the Vermont team, though at different times in the project, participation by these individuals is reported separately and in combination. The first trainer/developer, given that he resigned from the team in October 1977, participated at a high level only in the discussions of the research question through preparation of the research design. When his participation level is combined with that of the trainer/developer selected to take his place, over the entire research effort the trainer/developer role appears to have participated somewhat more extensively than the individual teachers. The researcher participated at a much higher

Figure IV - 7
Participation of California IR&DT Team Members
in all Research Steps Combined

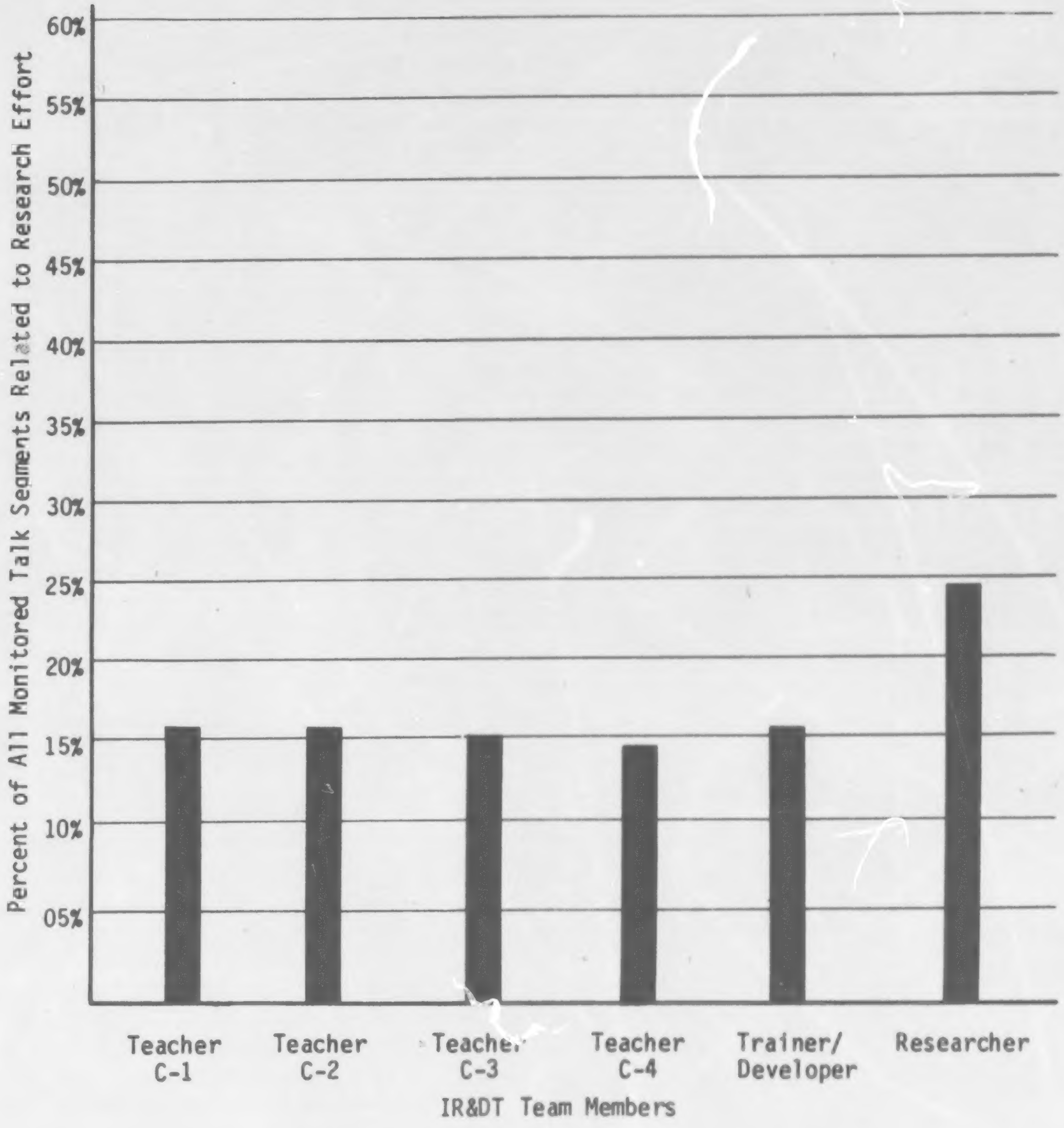
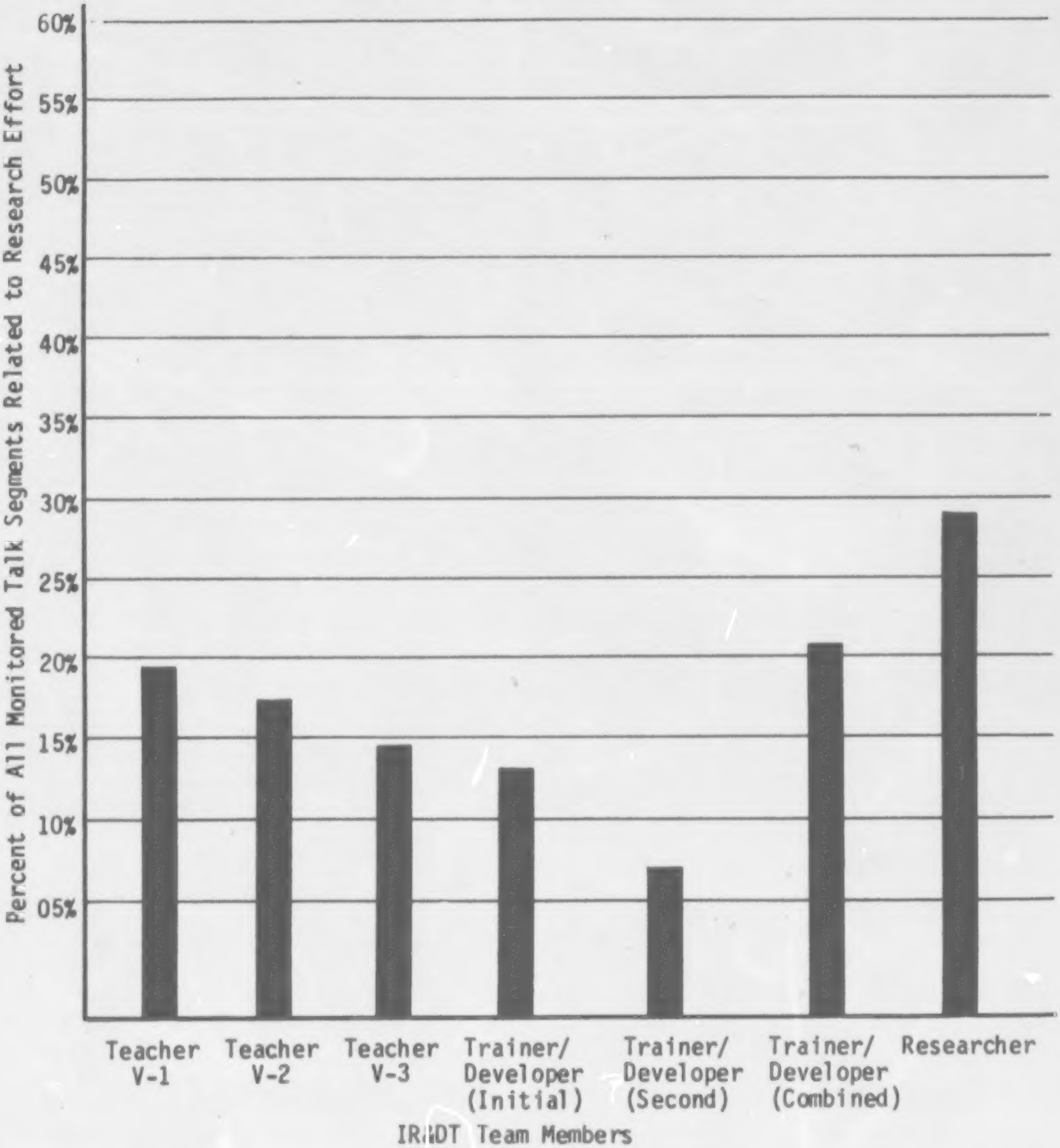


Figure IV - 8
Participation of Vermont IR&DT Team Members
in all Research Steps Combined



level than other individual team members. However, as was noted in the discussion of the California teams' interaction, when participation of Vermont teacher members was combined, the teacher role had the highest participation level of the roles represented on the team.

Based on the information, reported above, regarding parity of team members in relation to the entire IR&DT effort, it can be said that (1) teachers on both teams participated about equally in team discussions, (2) the teacher role perspective was more prevalent in discussions of r and d issues than other role perspectives, (3) trainer/developers on both teams participated at about the same level as did the teachers when they were considered as individuals, (4) researchers on both teams were more contributory to discussion of research issues than other team members when the members were considered individually, (5) as discrete activities, on both teams the research activities that followed identification of the research question received less attention during team meetings than was given to the question generation step, (6) the Vermont team displayed less persistence in consideration of the research activities following question identification than the California team, and (7) following question generation, the California team members each participated in a higher frequency of talk segments related to the research effort than the individual Vermont team members.

The Nature of Interaction in Relation to the Research Steps, Development Activities and Non-Research Issues

The preceding section discussed the degree of interaction of team members as it illustrated parity of participation in IR&DT implementation. It was determined that there was general parity among individuals with researchers, as individuals, participating at higher levels than other team members but with the teacher role perspective the most prevalent.

In order to understand team member participation more fully, particularly as it related to the progress of the teams, the nature of each member's participation also was investigated. Relative to the nature of participation, the talk segments derived from the audio-recordings of team meetings were coded according to talk segments related to the eight research steps considered necessary for formulation and conduct of a research effort, talk segments related to non-research issues excluding talk that dealt with development of the team's teacher training product, and non-research talk that focused on development of the teacher training product. Specifically, the following categories were used for this analysis:

Research Related

Step 1: Identification of issue (question) to be studied
Step 2: Selection of research strategies
Step 3: Nature of data to be collected
Step 4: Data collection procedures
Step 5: Preparation of research design
Step 6: Data collection
Step 7: Data analaysis
Step 8: Development of conclusions to be reported

Non-Research Related (Other)

A - Personal and professional supportive behavior
B - Non-professional irrelevant talk
C - Professional irrelevant talk
D - Team group process talk
E - Setting process talk
E_1- Talk related to the team's involvement with Far West Laboratory

Non-Research Related (Development)

G - IR&DT development/training talk
G* - Development/training talk not related to IR&DT

To promote understanding of the subsequent section of this chapter, a brief discussion of the above categories is in order. The numbered categories refer to the research steps that were speculated as being appropriate to successful conceptualization and conduct of a research effort. Each step was known to the IR&DT team members as a consequence of what might be called "direct instruction" by Far West Laboratory staff during the orientation session held in August 1977. The lettered categories emerged as a consequence of examination of the available team member participation data. These categories refer to talk segments which were not reflective of the research steps noted above. Category A includes talk which was exclusively of a positive affect regarding another team member's personal or professional behavior. Examples of segments included here would be, "Wow, this really looks great," and "You did a beautiful job." Although each of these sentences had some referent to the IR&DT effort, there was no substantive focus on a specific aspect of the team's work in the sentences themselves. Category B reports talk segments which were not relevant to the research and which had as their foci phenomena not usually assumed to be related to eduation generally. Examples of such segments would include, "Did you see Star Wars?", "I had my eyes examined yesterday," and "That crowing rooster sounds lonely." Category C reports talk segments which were not relevant to the research process but which did refer to phenomena related to schooling and the broad arena of education but not to IR&DT implementation. Examples of Category C segments would include, "Marvin really went on a tear during reading today," "I had four students added to my class this week," and "Where can I find some egg cartons for storing the kids' counting markers?" Category D includes talk segments which referred directly to the teams' procedures and activities but which did not include references to substantive research or development issues. Examples of these would include, "If you want to get in touch with me, here's my telephone number," "Should we schedule the meeting before school or after school?", and "I'll take notes at today's meeting." Category E includes talk segments which referred directly to procedures in the setting(s) in which the team members functioned professionally. Examples which would be included in Category E are "I'll see that the principal gets a copy of this report," "If we reschedule the assembly program it will make the principal's life a little easier," and "Who is going to present the revised budget to the district finance office?" Category E_1 includes talk which had as its focus the Far West Laboratory and Laboratory staff. Although the Laboratory was some distance from each of the two teams' natural settings, it became a component of team members' workplaces if only ideologically (see technical assistance discussion later in this chapter). To an extent, the Laboratory was seen by team members as another piece of their professional resource base. Examples of talk that would be included in Category E_1 are "Betty and Bill told us about that problem during orientation," "Is the National Advisory Panel meant to help us or to judge us?" and "I think this is good enough to send to the Lab." Category G includes talk segments which had IR&DT development and training as their substantive foci. Examples that would fall in this category include "We should remember that for the workshop this summer," "That would be a good piece of material for the training sessions," and "We'll have to think about how to use this process in our fall course." Category G* refers to talk which had training and development substance but which substance was not directly related to the team's IR&DT training process and/or product. Talk in this category usually referred to teaching difficulties experienced and ways to ameliorate them apart from the teaching issues under consideration for inclusion in the team's training product, for example "There are so many ways to teach children to write the letter K....why don't you try some of them?", "I could tell you were mad at Jack today ... why didn't you just ask him to sit quietly until you could find time to speak with him?" and "Here is an article on class size that might help you with all those extra kids."

It should be understood that conversation, unlike predetermined and well-thought out written prose, frequently has several substantive elements in close juxtaposition. A piece of talk might, for example, refer to group process as a way of dealing with a data collection issue and at the same time be put into a word context which offers praise to someone in the group. Such a segment would be coded 4 (data collection procedures), A (personal and professional supportive behavior), and D (team process). Since no attempt was made to break down conversation into its most discrete segments, no direct numeric correspondence can be drawn between the instances of talk according to speaker and the numbers of instances within categories reported in the figures that follow. As with the example above, inclusion of a talk segment in multiple categories was common.

Figure IV-9 illustrates the nature of the California IR&DT team's talk as it was categorized according to the schema presented above. Across the entire IR&DT implementation period, the greatest number of coded talk segments were research related and had to do with selection of the issue to be studied (category 1). The categories which included the next most numerous talk segments were data collection (category 6), data collection procedures (category 4), and data analysis (category 7). Selection of research strategies (category 2) and the nature of the data to be collected (category 3) each received little attention. Overall, the California team exhibited little irrelevant talk (categories B and C), dealt with their setting minimally (category E), and treated the selection of the research strategy (category 2) almost as a "given", i.e. they would engage in naturalistic research. Talk about the teacher education component (category G) was delayed until late spring/early summer 1978 and eventually accounted for only approximately 12% percent of the team's talk.

The profile of the Vermont team's interactiveness, Figure IV-10, presents a different picture than that for the California team. The attention given to

Figure IV - 9
Nature of Interaction of California IR&DT Team
Total IR&DT Implementation Period

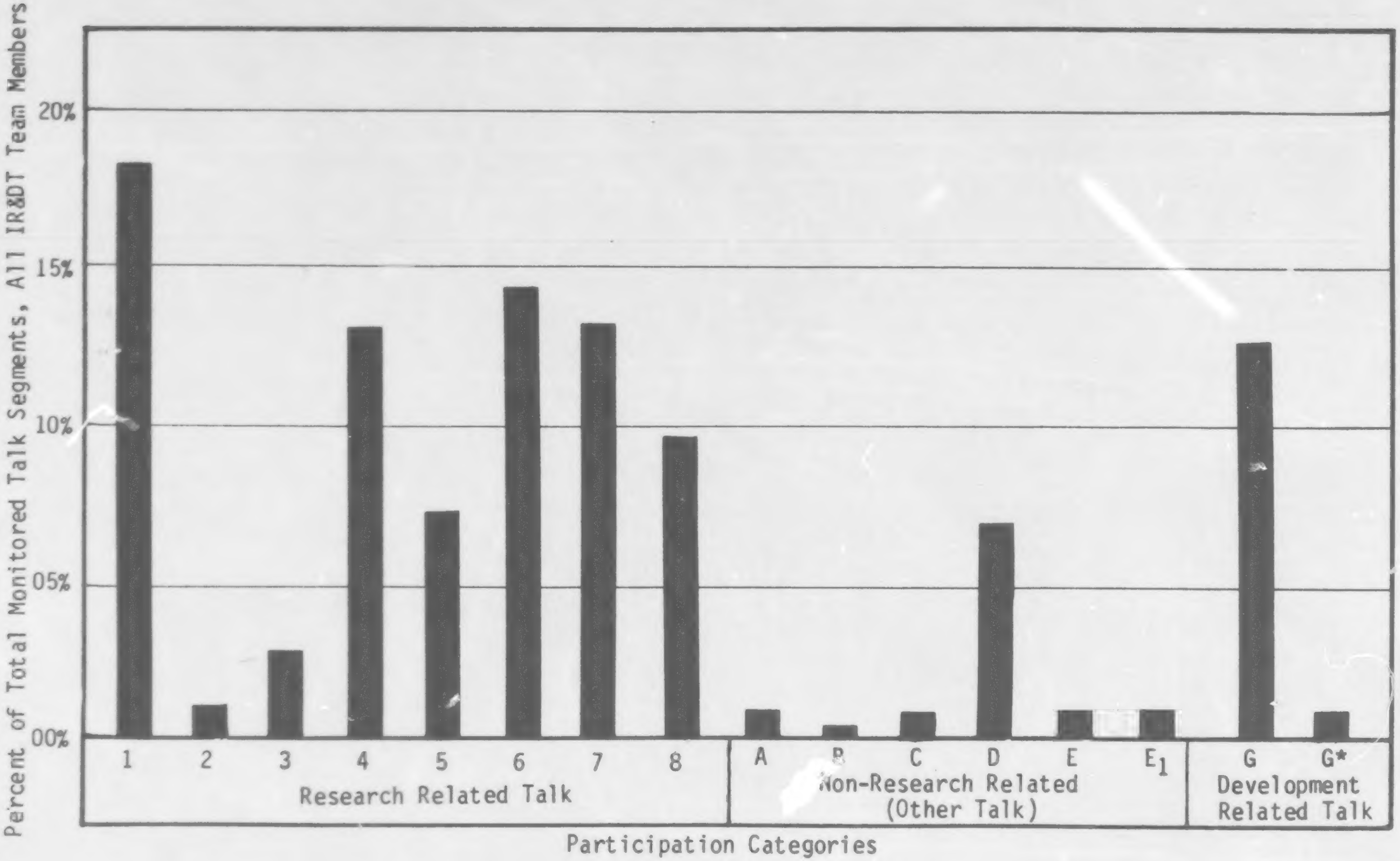
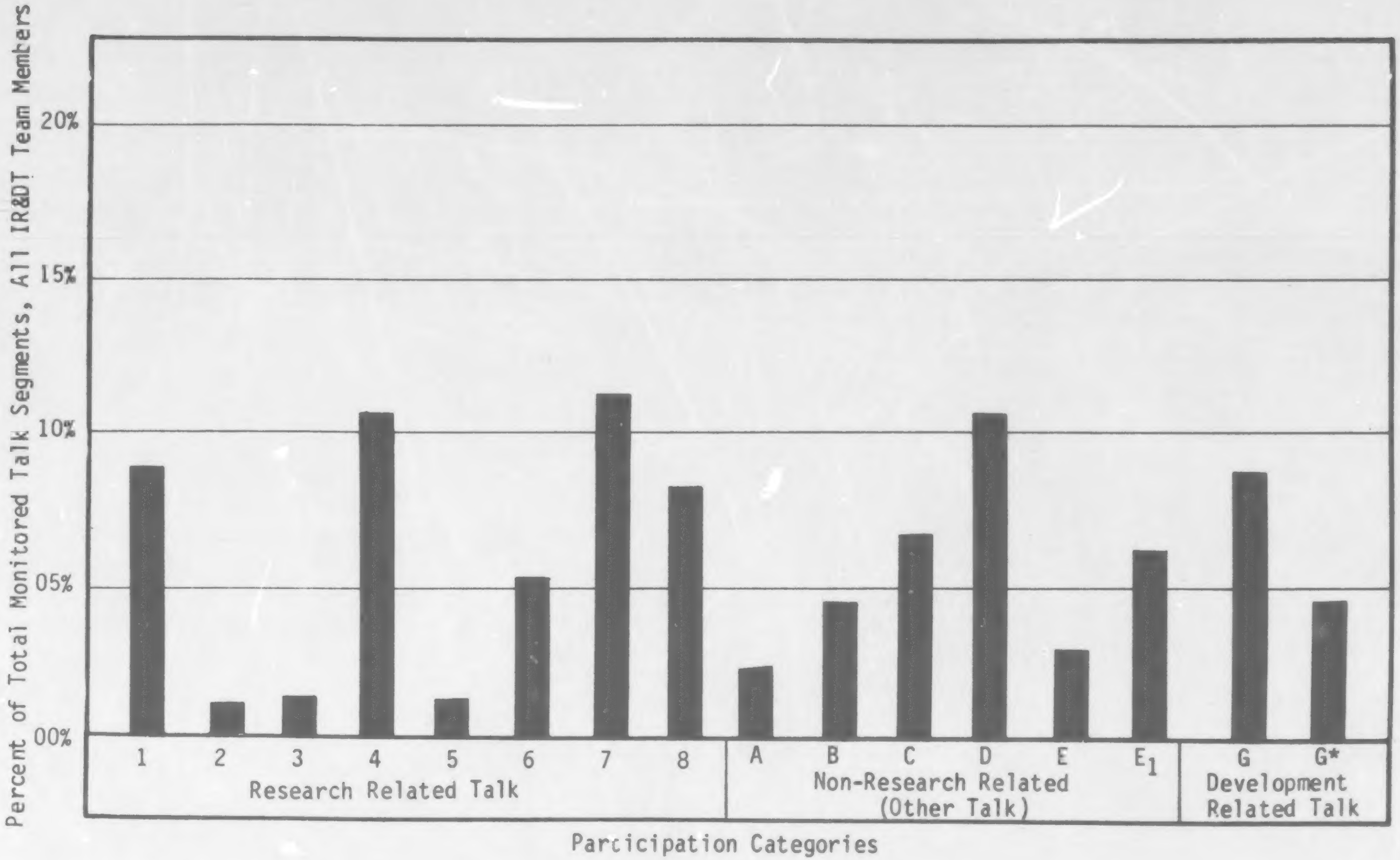


Figure IV - 10
Nature of Interaction of Vermont IR&DT Team
Total IR&DT Implementation Period

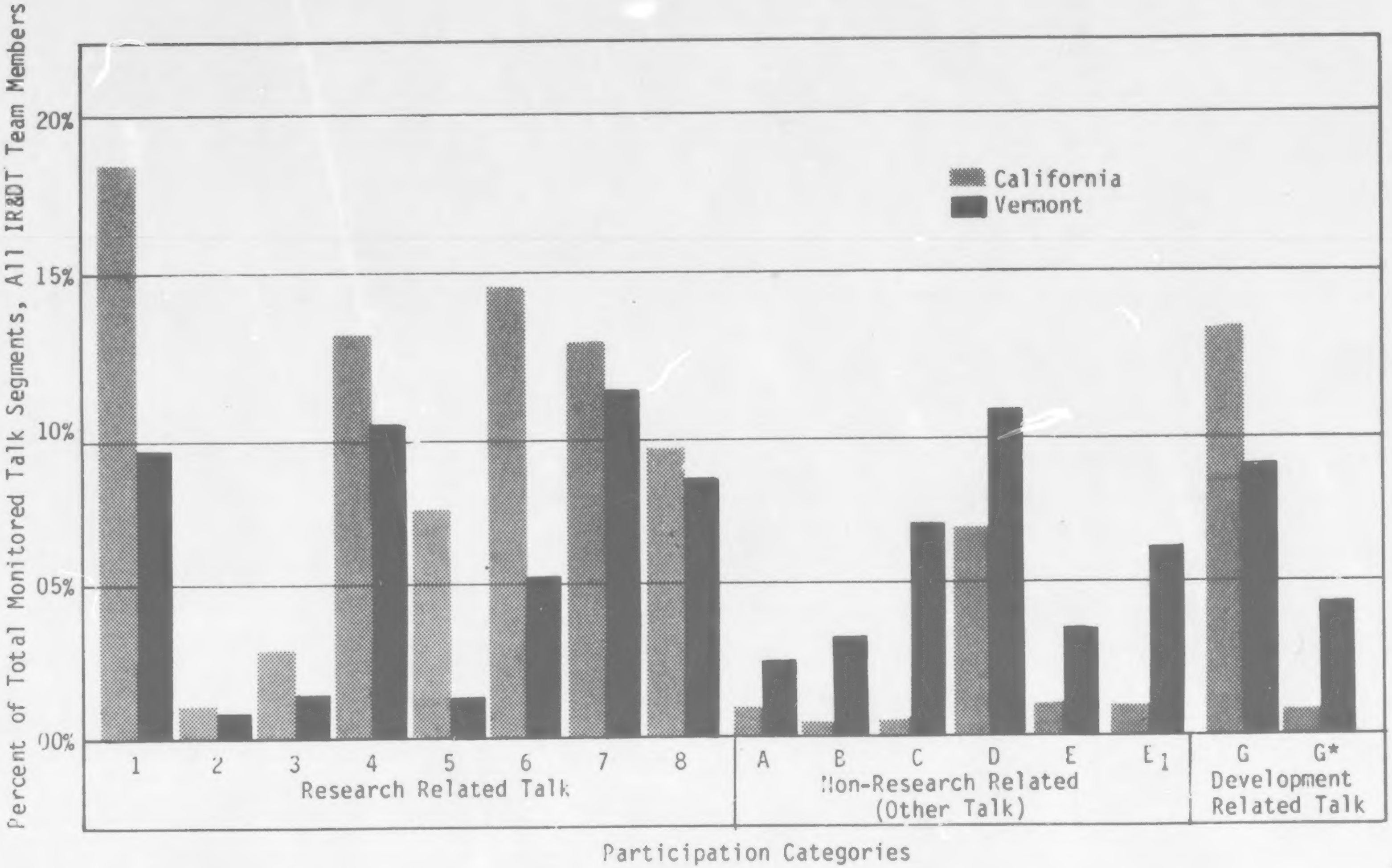


the issue to be studied (category 1) was less that 10 percent of the total coded talk segments. On the other hand, attention to the team's procedures (category B) comprised 12 percent of all the monitored talk, and irrelevant talk (professional and personal, categories B and C) was common. Data collection procedures (category 4), data analysis (category 7) and development of conclusions to be reported (category 8) each were attended to in approximately 10 percent of the coded talk segments. Attention to Far West Laboratory-related matters (category E_1) was included in some 5 percent of the talk segments. IR&DT-related development was included in 8 percent of the coded talk segments.

It has already been noted that the original Vermont trainer/developer resigned after approximately two months with the project. The profile of team talk during the time he was a team member showed a sharply different picture than the one noted in Figure IV-10. An interim report, prepared as a work-in-progress statement early in 1978, showed that prior to his departure the Vermont team's talk was largely IR&DT-irrelevant and concentrated upon teacher education activities for the teachers on the team rather than for a wider audience. The trainer/developer who replaced this original team member appeared to be much more task-oriented, more sharply focused, and more aware of the requirements of IR&DT. Her participation in team meetings, it is believed, is primarily responsible for the pattern of team talk seen in Figure IV-10.

Figure IV-11 illustrates the differences in the nature of interaction of the California and Vermont IR&DT teams. Of particular interest is the discrepancy in terms of attention given to the selection of a research question (category 1), the differences in attention given to other research steps (categories 2-8), the striking dissimilarity in terms of IR&DT-irrelevant talk (categories B and C) and the far greater attention given to Far West Laboratory-related topics (category E_1) by Vermont as compared with California. Based on these

FIGURE IV - 11
Nature of Interaction of California and Vermont IR&DT Teams
Total IR&DT Implementation Period



data, it is clear that there were two very different IR&DT teams in operation during the IR&DT Study.

Thus, regarding the nature of interaction of the two IR&DT teams, it can be said that (1) The California team gave approximately 16 percent of its attention to the selection of the issue to be studied, (2) the Vermont team gave slightly more than 8 percent of its attention to the same research step, (3) neither team gave as great attention to the other research steps as they did to selection of the research question, (4) the California team gave approximately twice as much attention to preparation of the research design and collection of data as Vermont, (5) both teams attended to how they would operate as a group with the Vermont team giving more attention to this matter than to any other, (6) few instances of irrelevant talk were found in the monitored segments of California team meetings whereas the Vermont meetings revealed substantial attention to issues outside the IR&DT process, (7) greater attention was given to the professional work places of team members in Vermont than in California, (8) the Vermont team referred to Far West Laboratory approximately three times as often in their discussions as the California team, (9) both teams gave attention to IR&DT development matters although the California team gave this topic one-third more attention than the Vermont team, (10) the Vermont team discussed IR&DT-irrelevant training and development more than the California team, and (11) the replacement of the original trainer/developer sharply altered the Vermont team's interaction profile.

Sequence of Attention to R and D Activities

The discussion immediately above gives some gross indication of the ways in which the two IR&DT teams interacted during the implementation of IR&DT. Because the research and development outcomes of the two teams were of such different qualitative order as judged by the National Advisory Panel (NAP), Far West Laboratory staff, and outside judges (see Chapter 5), a decision was made to look at the team interactions once again to see if the sequence of attention to research and development activities differed for the two teams. (It has already been noted that the degree of attention to research and development differed for California and Vermont.)

Figure IV-12 illustrates the amount of attention given the research steps by the California team for each of the 23 team meetings that were monitored. This is expressed in terms of percentages of coded talk segments for each meeting devoted to each of the eight research steps outlined earlier and to IR&DT-related development.

Looking at the data reported in Figure IV-12, it can be seen that there was a consistent movement from research step to research step across the California team meetings. Significant attention was given to the steps in the sequential order in which they were presented to the team during the August 1977 orientation session. Meetings 11 and 12, which occurred after the NAP critique of the team's research design, reflect the two areas most emphasized to accommodate changes in the design that were recommended by the Panel. Following this recycling/review period, the California team appears to have continued focusing upon the research steps according to the sequence suggested to them by Far West Laboratory staff.

Developmental efforts did not receive concerted attention by the California team until mid-way through the IR&DT implementation period. While certain minimal references were made to the need to attend to training prior to this time, e.g. attention of a "Let's remember that for an inservice course," or "We really should talk about the inservice," it was the thirteenth meeting of those monitored before development received a codable percent of attention. As the

Figure IV - 12
Sequence of Attention Given to Research and Development Activities
by the California IR&DT Team during 23 Team Meetings

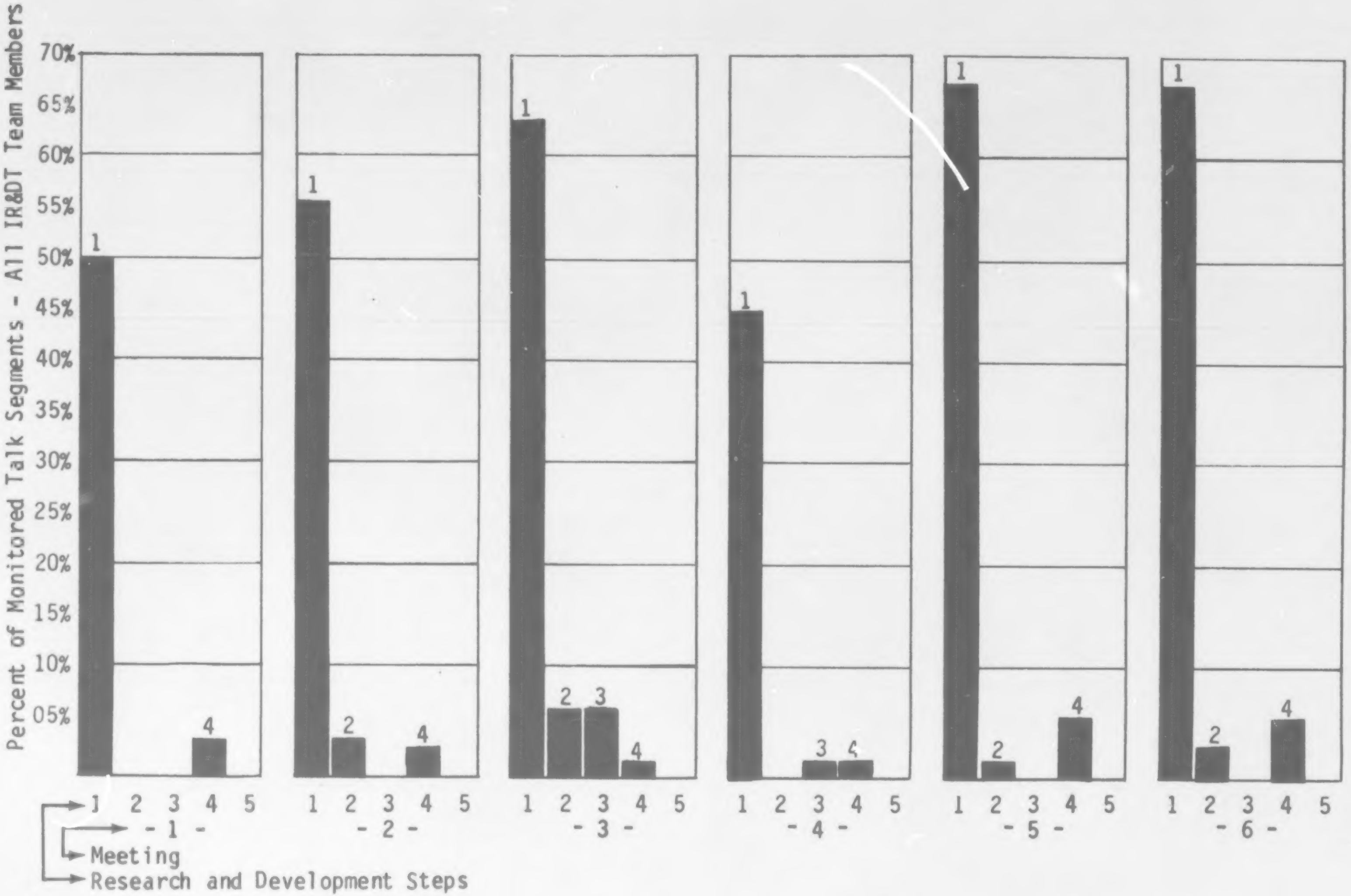


Figure IV - 12 (continued)
Sequence of Attention Given to Research and Development Activities
by the California IR&DT Team during 23 Team Meetings

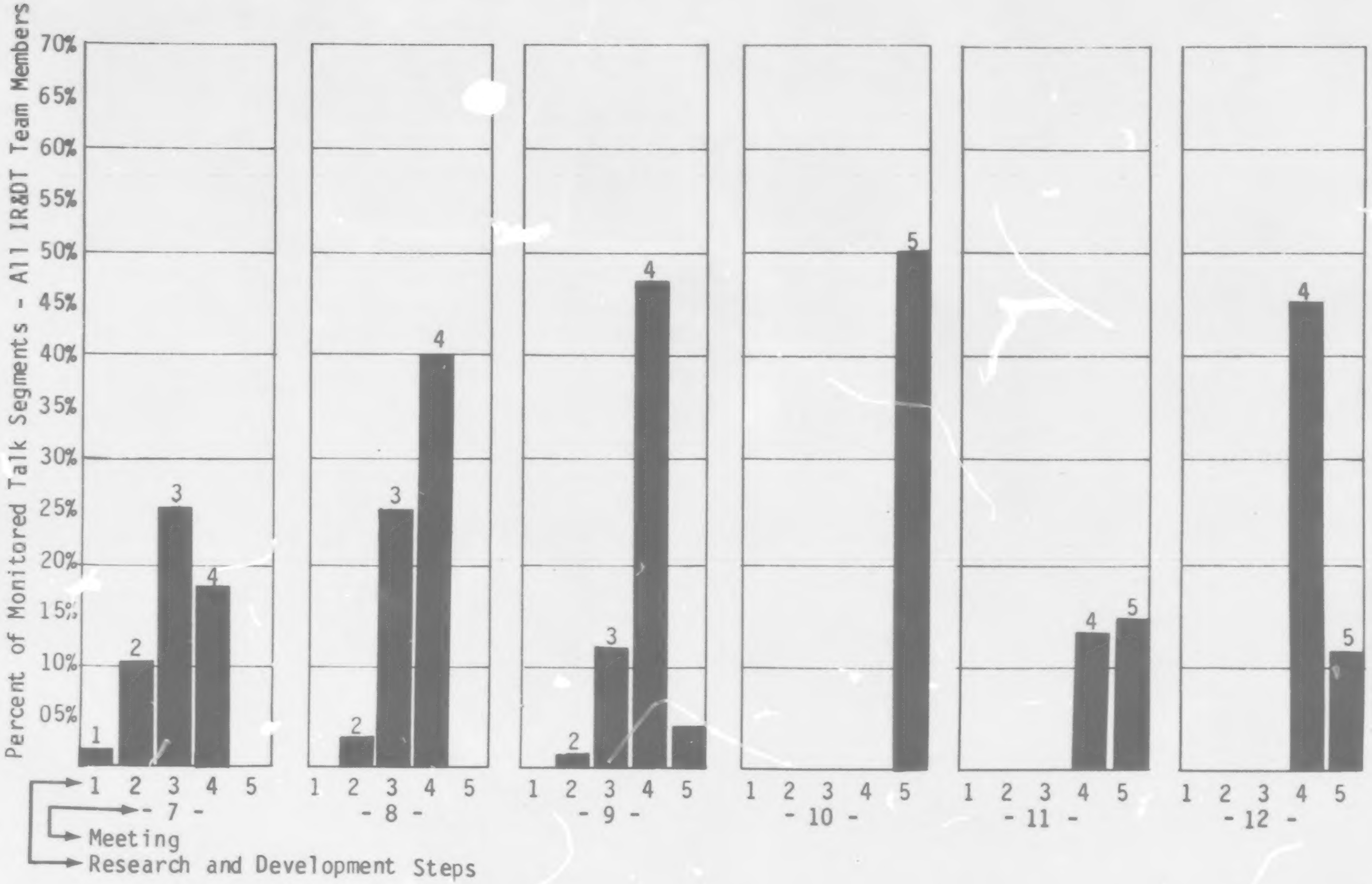


Figure IV - 12 (continued)
Sequence of Attention Given to Research and Development Activities
by the California IR&DT Team during 23 Team Meetings

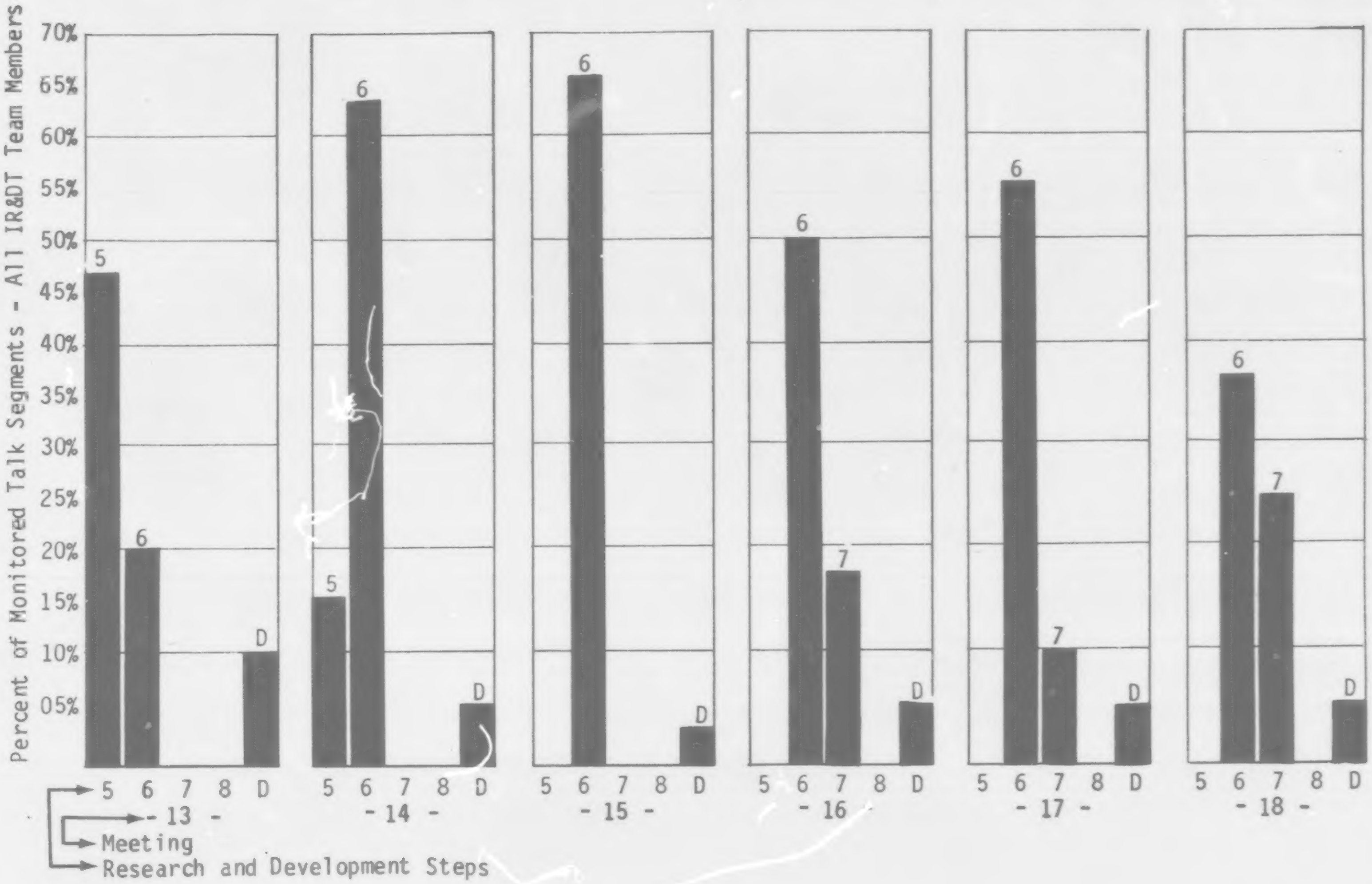
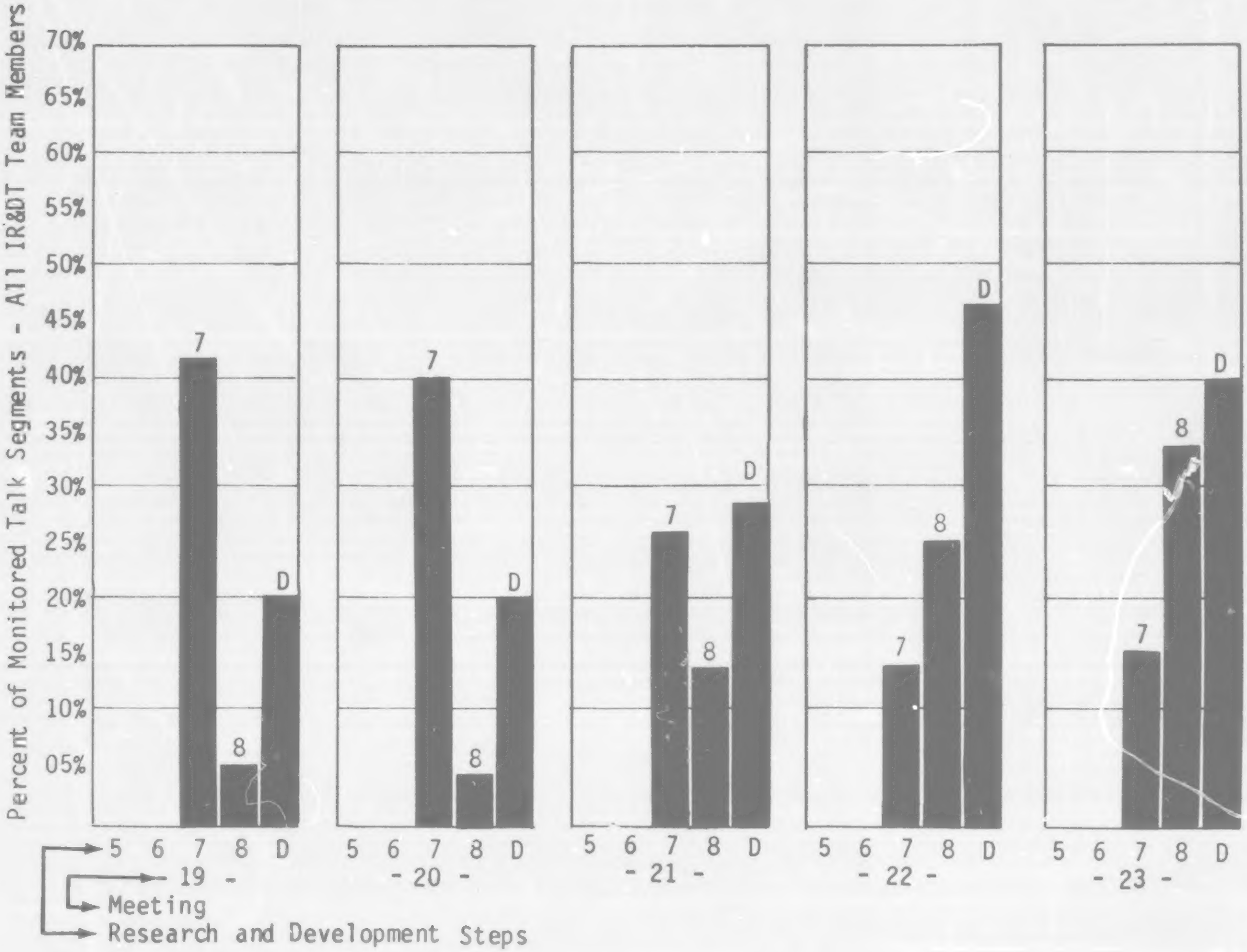


Figure IV - 12 (continued)
Sequence of Attention Given to Research and Development Activities
by the California IR&DT Team during 23 Team Meetings



team's data collection and data analyses phases were nearing completion, the nature and design of the team's inservice teacher training activity began to receive more attention (see meeting 19) and was given even more attention as findings and research procedures were reviewed for inclusion in the training as well as in the research report.

The California team meetings devoted exclusively to the preparation of their final research and training reports were not monitored and, hence, do not appear in Figure IV-12. These sessions were all-day work periods in which team members worked in pairs or other small groupings with the data and, consequently, were not considered formal team meetings in which all members were engaged in the same tasks and deliberations.

Figure IV-13 displays the same information regarding sequence of attention to r and d activities for the Vermont team as was reported above for California except that 25 meetings were monitored. The data reported in Figure IV-13 suggest that the Vermont team gave a relatively small portion of its attention to research design issues during the first five meetings that were monitored. Further, the team did not appear to give the research steps systematic, sequential attention. The formulation of the question/issue (research step 1) received some persistent attention but the other research steps were not treated systematically. This is particularly demonstrated when one examines the first fifteen monitored meetings. During the first fifteen meetings, only meetings 6 and 9 included more attention to the research steps than to other procedural or research-irrelevant issues. Meetings 13, 14, and 15 occurred after the NAP critique of the Vermont team's research design. Due to the fact that the options given to the team by Far West Laboratory following the NAP critique included possible dissolution of the team (see technical assistance section of this chapter), meeting 13 was devoted largely to matters concerning the possible

Figure IV - 13
Sequence of Attention Given to Research and Development Activities
by the Vermont IR&DT Team during 25 Team Meetings

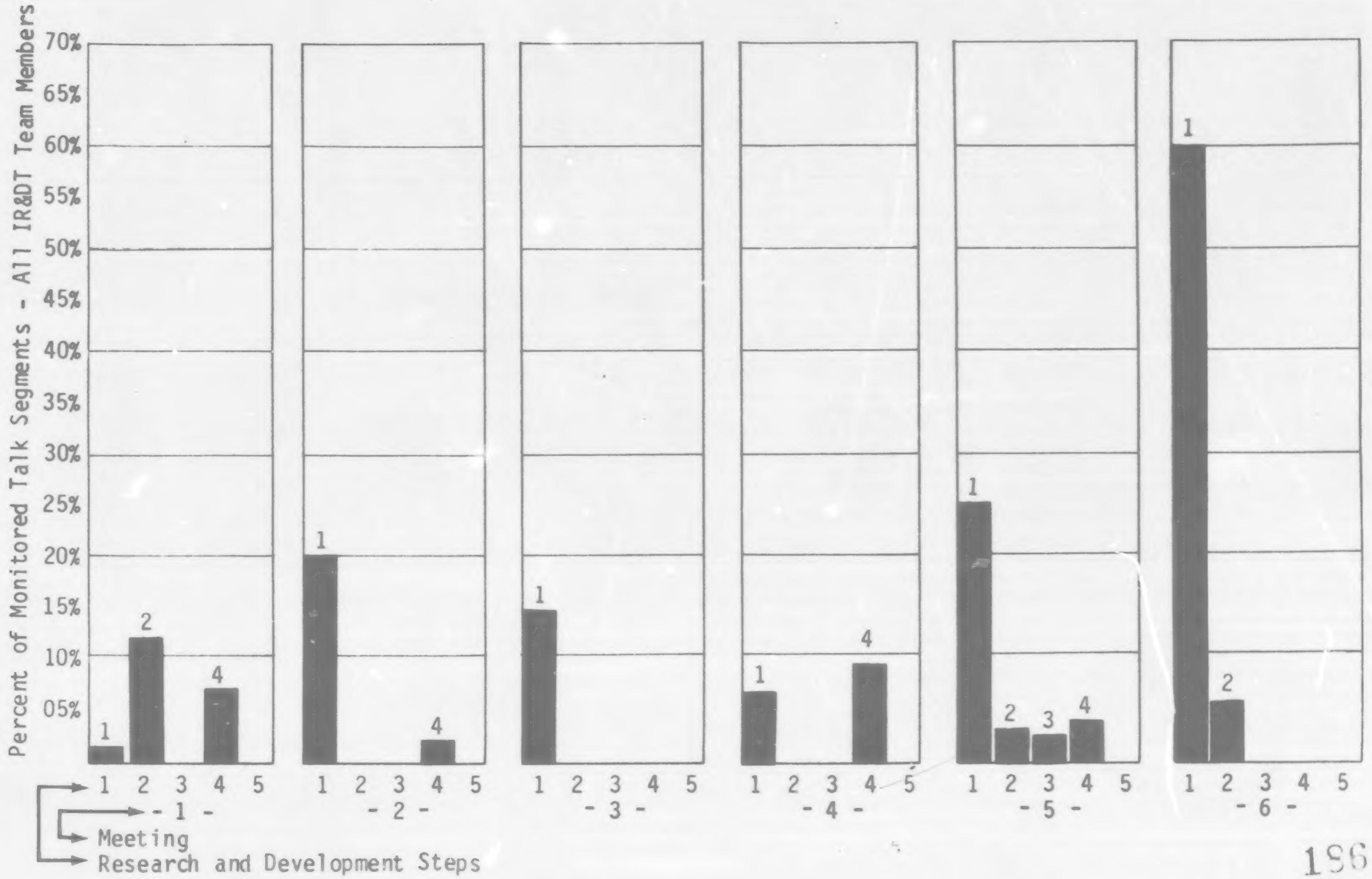


Figure IV - 13 (continued)
Sequence of Attention Given to Research and Development Activities
by the Vermont IR&DT Team during 25 Team Meetings

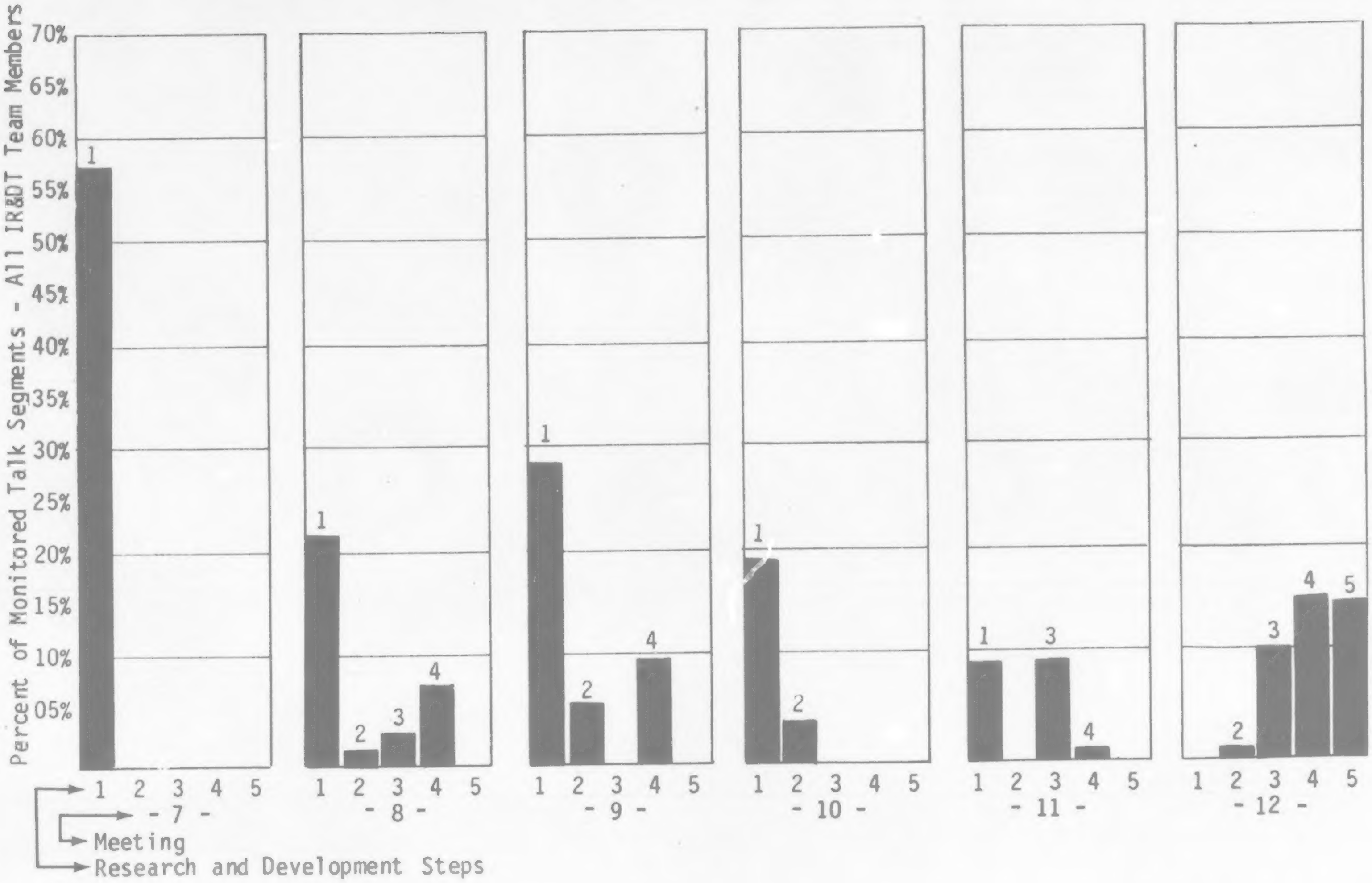


Figure IV - 13 (continued)
Sequence of Attention Given to Research and Development Activities
by the Vermont IR&DT Team during 25 Team Meetings

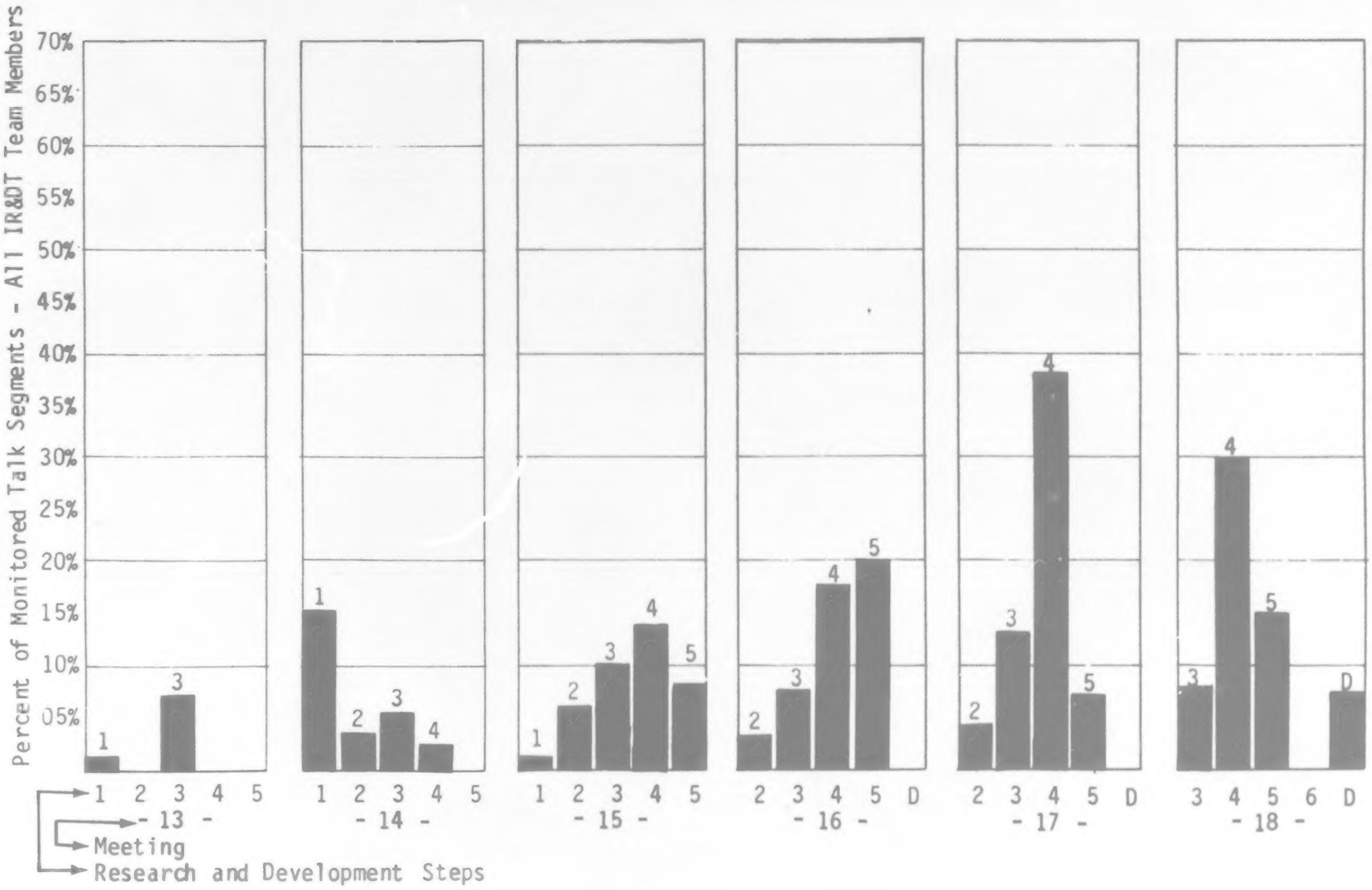
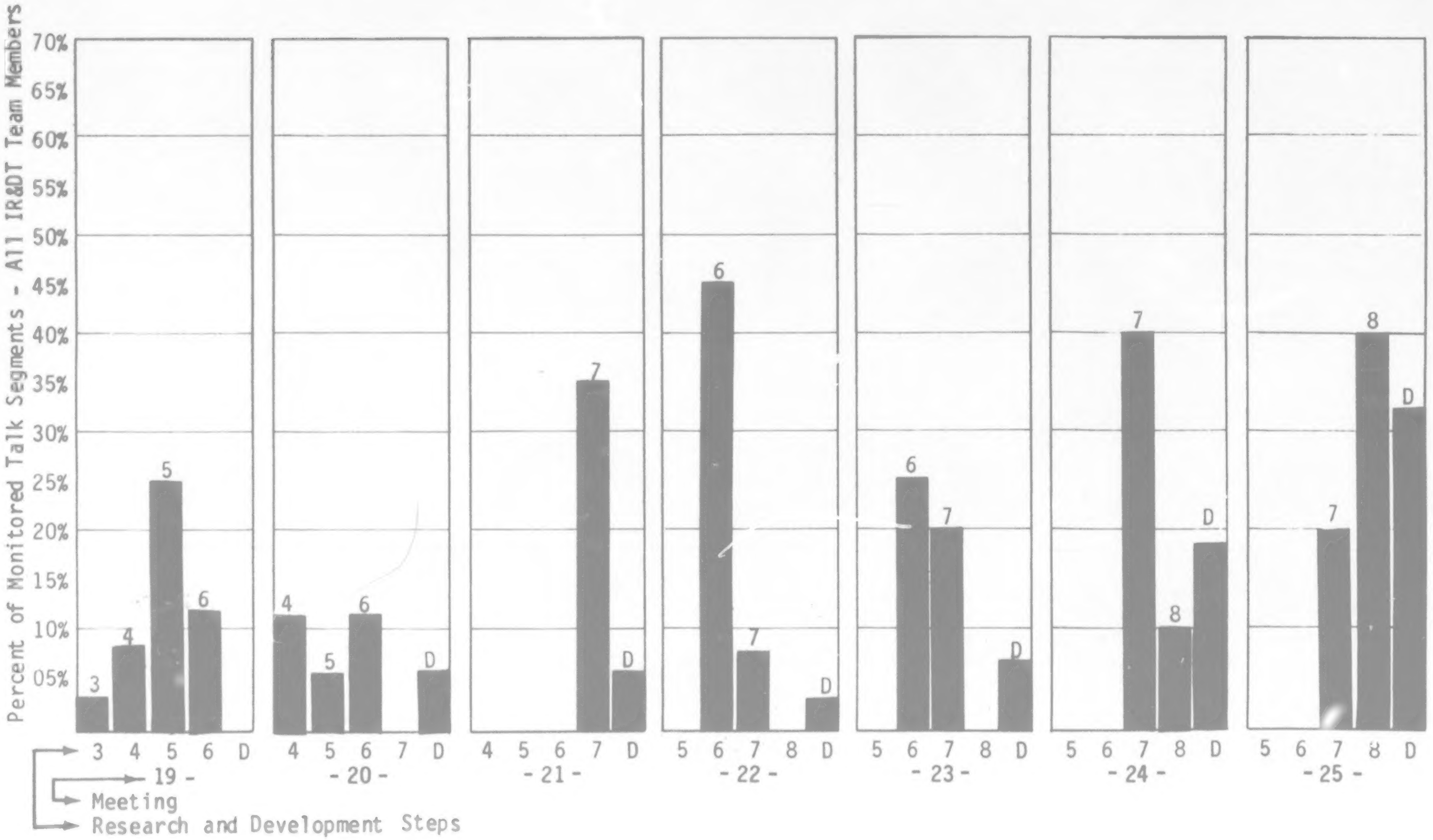


Figure IV - 13 (continued)
Sequence of Attention Given to Research and Development Activities
by the Vermont IR&DT Team during 25 Team Meetings



dissolution and the team's subsequent decision to maintain the team. Since talk segments not related directly to specific r and d activities are not reported in Figure IV-13, the total percent of reported talk for that meeting is low. Meeting 14 likewise was taken up with ways to operate together more effectively. Ways to respond to the NAP critiques also were discussed in meeting 14. Meeting 15 illustrates the across-the-board attention given to refining the design and, in terms of the low percent of total talk segments reported, reflects the amount of attention given to procedural and IR&DT-irrelevant issues. The team gave concentrated attention to the preparation of the revised research design (Step 5) only in meetings 16 and 19.

As the issues to be dealt with became more a consequence of fulfilling the research and development specifications of IR&DT, it can be seen that the Vermont team became more systematic in its sequence of attention to research steps 6 through 8, in particular, in meetings 20 through 25.

As was true for the California team, the Vermont team deferred sustained discussion of their training effort until the research reached the data collection period. Although the Vermont team gave some attention to development beginning with meeting 18, it was only during meetings 20 through 25 that the development activity received sustained attention.

It will be remembered that the second Vermont trainer/developer was seen as a possible contributor to the more systematic and IR&DT-specific talk which emerged in team meetings after her appointment. This belief is strengthened when one examines the percent of total coded talk segments that were reported as related to r and d activities and the sequence of attention to various activities beginning with meeting 16.

Based on the data reported in Figures IV-12 and IV-13, the California and Vermont IR&DT teams also can be said to differ in the sequence of attention given to r and d activities, with the California team being more systematic in their progress from research step to research step to development.

Role Contributions of IR&DT Team Members

Speculations regarding appropriate role contributions to the research and development steps were advanced during the planning for IR&DT. It was expected that teachers, researchers, and trainer/developers would bring different perspectives, including knowledge and skill, to the team's r and d effort and that those perspectives would be played out in certain ways during team interaction. The purpose of this section of the Chapter is to illustrate the degree to which those perspectives were played out. As in the discussion of the facets of team interactions, talk segments from the formal team meetings were coded to determine role contributions to the r and d and their frequency of occurence on each team. It is important to note that the differential numbers of team members, six in California and five in Vermont, as well as the two additional Vermont team meetings which were monitored may account for differences between the total number of times a person in a particular role on a team performed a specific function during IR&DT implementation. Naturally, there are other possible reasons for differences but the greater opportunity to speak given fewer team members is an obvious circumstance that should be taken into account when interpreting the data that follow.

Table IV-1 displays the frequency of behaviors defined by team role that occurred related to the identification of the question/problem to be studied by each team. Teacher behavior was markedly different in the two sites. The Vermont teachers suggested slightly more than twice as many issues as the California teachers. This difference can be explained in part by the fact that the Vermont teachers tended to reiterate issues at several meetings with

Table IV - 1
Frequency of Occurrence of Behaviors According to Team Member Role
Identification of the Research Question/Problem

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Suggests issue(s)	23	50	Suggests issue(s)	4	12	Suggests issue(s)	3	12
Refines issue(s)	89	40	Refines issue(s)	45	47	Refines issue(s)	20	25
Justifies importance of issue(s)	5	11	Questions teachers and trainer/developer in terms of justification	5	10	Develops procedures for justification of issue(s)	16	6
Illustrates presence of issue(s) in own classroom	37	15	Offers ways to gather data to justify pervasiveness of issue(s)	10	12	Provides feedback data based on observations relevant to issue(s)	16	6
Questions pervasiveness of issue(s) formally and informally with other teachers	9	6	Reports results of data collection related to justification of issue(s)	0	1	Questions pervasiveness of issue(s)	3	0
Uses data to support pervasiveness of issue	9	2	Reviews research literature related to issue(s) under consideration	5	0	Provides data to support/reject notion of pervasiveness of issue(s)	5	0
Requests relevant data to help in decision	8	6	Presents relevant literature to team	28	3	Presents relevant literature to team	3	0
Follows up on request for data	0	2	Monitors and maintains attention to issue identification	13	5	Interprets ethnographic and other observations in terms of issue(s)	0	2
Formulates procedures to verify presence of issue(s)	4	0						
Collects and reports data to verify issue(s)	20	0				Keeps record of progress as possible training vehicle	0	0
Questions feasibility of studying issue(s)	3	0				Relates issue(s) to potential training	3	0
Consults literature related to issue(s)	7	2						

little or no obvious recollection that these issues had already been part of the group's discussion. The California team used the brainstorming technique to identify questions/problems and then systematically moved through them refining, justifying, and deleting. This procedure, which was not followed to any obvious degree in Vermont, accounts for the greater number of times teachers on the California team entered team discussions related to refinement of the issues being considered and provided illustrations of the presence of the problems in their own classrooms. Throughout the question/problem identification process, the California teachers demonstrated the role behaviors that had been postulated as essential contributions to IR&DT more persistently than the Vermont teachers. Especially revealing was the attention given by the California teachers to the collection and reporting of data to verify the presence and pervasiveness of the problems under consideration.

Regarding the researchers' contributions to questions/problem identification, the California researcher appears to have held back from suggesting issues for study more than the Vermont researcher. Other sharp differences between the researchers occurred in the presentation of relevant literature and the maintenance of the team's attention to the identification of a research question/problem. In these instances the California researcher exhibited many more relevant behaviors.

The California trainer/developer also suggested fewer research questions/problems than his Vermont counterparts, in combination. Further, the California trainer/developer demonstrated more of the behaviors that were advanced as contributions to be given by the person in his position than the Vermont trainer/developers in combination.

The research questions that were selected for study in Vermont and California were first suggested by teachers.

It already has been noted that selection of research strategies received little attention from either team when compared with the number and portions of team meetings devoted to the other research steps. Table IV-2 demonstrates this. Although the frequencies with which various team members performed specific role functions were not significantly different across the teams, the California IR&DT team demonstrated more of the specified role functions than the Vermont team. Again, the California teachers appeared to have engaged more actively in the informal testing of research strategies for their feasibility and effectiveness than the Vermont teachers. This pattern held true for the teams generally; that is, there was evidence to suggest that the California team members actively checked out the research components more often than the Vermont team. In fact, the Vermont team appeared to have done no pilot testing of research strategies inasmuch as no team discussions dealt with planning for or talking about the results of such an endeavor.

Table IV-3 shows the extent to which the team members performed the designated role functions while deciding upon the nature of the data to be collected. In each instance the California teachers were involved actively in suggesting the types of data to be collected, questioning the presence in classrooms of certain types of data sources, and verifying that data sources could be observed/did occur in classrooms. The Vermont teachers showed fewer instances in which they assumed these role functions.

The researchers on the two teams appeared to have left discussion of the data to be collected largely to other team members. In particular, the California researcher appeared to have deferred to the teachers for input. While there was a slightly higher total frequency of role related behaviors for the California researcher, this is not believed to illustrate more or stronger input.

Table IV - 2
Frequency of Occurrence of Behaviors According to Team Member Role
Selection of Research Strategies

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Suggests strategies	6	4	Suggests and responds to requests for alternate strategies	10	7	Provides relevant information based on past observation regarding strategies	4	5
Requests alternate strategies to study issue selected	2	0	Notes the possible advantages and disadvantages related to proposals	5	5	Assists in collection/analysis of pilot test data	0	0
Uses experience and knowledge of own classroom to test feasibility of using strategies proposed	11	4	Provides suggestions for low-level intrusiveness of pilot test	0	0	Suggests ways teachers can best learn how to "work" the strategy	0	2
Uses understanding of other like-teachers' classrooms as test of feasibility of using the proposed strategies	3	0	Assists teachers in collection and analysis of data related to pilot test	0	0	Offers predictions, based on experience and knowledge of level of acceptability of strategy selected	3	0
Pilot tests the strategy (in whole or in part)	2	0	Provides examples of studies conducted using strategies discussed by team	2	0	Tests out notions of acceptability with others, formally and informally	3	0
Pilot tests the strategy seen to be most appropriate	0	0				Keeps records of process as possible training vehicle	0	0
Shares consequences of pilot test with team	0	0						
Makes recommendation (accept, reject, modify) based on pilot test	0	0						
Uses data to support recommendation	0	0						

Table IV - 3
Frequency of Occurrence of Behaviors According to Team Member Role
Deciding Upon Nature of Data to be Collected

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Suggests data related to issue(s) to be studied	21	9	Suggests data related to issue(s) to be studied	7	5	Suggests data related to issue(s) to be studied	4	3
Questions presence of data	3	0	Provides examples of data related to issue(s) to be studied	6	2	Assists in verifying applicability of data to issue(s) under study	2	0
Verifies presence of such data in classrooms (own or others)	8	4	Assists teachers in verification process	2	4	Verifies presence of such data in classrooms	4	0
Provides examples of such data in classrooms	3	2	Provides criteria against which to determine utility of data as related to issue under consideration	0	2	Keeps record of process as possible training vehicle	0	0
			Uses tentative data manipulation processes with team to determine utility of data under discussion	2	0			

The Vermont trainer/developers, in combination, contributed little to this research step. The California trainer/developer provided some input but, when compared with that of the teachers and the researcher on the California team, it too was minimal.

Table IV-4 notes the extent to which IR&DT team members performed the designated role functions during selection of data collection procedures. The California teachers consistently participated at a higher level than the Vermont teachers. This was especially true relative to the refinement of data collection procedures. The Vermont teachers appeared to have left these decisions up to others on the team or did not bring the issues up in the meetings which were monitored for this report. Overall, the California teachers gave far more role-related input during this research step than the Vermont teachers even

Table IV - 4
Frequency of Occurrence of Behaviors According to Team Member Role
Selection of Data Collection Procedures

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Suggests data collection procedures	15	9	Suggests data collection procedures	13	4	Suggests data collection procedures	7	3
Tests procedures in own classroom	5	5	Provides examples of such procedures	15	3	Tests procedures in team members' classrooms and in others	0	3
Tests procedures in others' classrooms	0	0	Monitors data collection feasibility tests	1	1	Provides criteria for preservation of natural ecology of classrooms	0	2
Refines data collection procedures	22	0	Provides criteria against which to measure validity and reliablity of procedures	7	1	Provides training in use of procedures	0	0
Provides data regarding degree of "intrusiveness" of procedures on classroom life	9	3	Uses tentative data manipulation processes with team to determine utility of procedures	0	0	Explains feasibility of procedures	7	0
Proposes ways to select and train data collectors	7	3	Proposes ways to select and train data collectors	3	1	Proposes ways to select and train data collectors	7	0
Proposes roles for data collectors	4	4	Proposes roles for data collectors	3	1	Proposes roles for data collectors	11	2
Proposes ways to identify and orient Tier II teachers	8	0	Proposes ways to identify and orient Tier II teachers	7	2	Proposes ways to identify and orient Tier II teachers	6	2
Questions data collection procedures	0	2	Refines data collection procedures	8	0	Suggests ways to field test the procedures	4	0
			Proposes ways to train team teachers to collect data	0	2	Coordinates pilot test of procedures (procedural)	0	0
Decides, with others, upon procedures to be used	3	0	Decides, with others, upon procedures	7	0	Decides, with others, upon procedures to be used	1	0
			Provides standards for use of procedures	0	0	Keeps record of process as possible training vehicle	0	0

when the fact that the California team included four teachers as compared with three on the Vermont team is taken into account.

The California researcher and trainer/developer also participated more extensively in discussion and action regarding data collection procedures than their Vermont counterparts. In fact, it was not clear from monitoring the Vermont team meetings just how data collection activities were decided upon, verified, justified, and so forth.

Table IV-5 indicates team member role functions in relation to the preparation of the research design. It will be remembered that the Vermont team went through several revisions of their research design as a consequence of the National Advisory Panel's critiques. Table IV-5 does not cover that entire revision period but only the period prior to submission of the original research design in early December 1977. Therefore, the figure reports data from the same period of implementation time for both teams.

Again, there were dramatic differences between the two teams. The California team attended much more overtly and much more interactively to the preparation of the research design than the Vermont team. In the meetings that were coded, the talk segments monitored for the California team showed that the talk had a direct relation to the research design presented to the NAP in December 1977. Such a direct relationship was not present for the Vermont team. Several California team sessions were devoted to refinement of the design and the teachers contributed heavily to the design as it was prepared and presented. These contributions included substantive input, technical editing, "devil's advocacy" questioning, direct working changes, and methodological clarification. Similar contributions also were noted for the researcher and the trainer/developer on the California team.

Table IV - 5
Frequency of Occurrence of Behaviors According to Team Member Role
Preparation of the Research Design

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Provides, from experience, logs, and other records, information regarding issue, strategy, data collection	6	3	Provides, from experience, logs, and other records, information regarding issue, strategy, data collection	7	0	Provides, from experience, logs, and other records, information regarding issue, strategy, data collection	3	0
Verifies accuracy of information reported in design	8	0	Requests verification of design decision steps from other team members	8	0	Provides criteria against which to test design's potential contribution to development/training	0	0
Tests design for standards related to maintenance of classroom ecology	5	0	Takes major responsibility for maintaining "research respectability" of design	6	2	Keeps record of process as possible training vehicle	3	0
Verifies applicability of literature (theory/prior research) to design	3	1	Refines literature review in light of others' input	2	0	Verifies applicability of literature review	0	0
Contributes to written statement	24	0	Takes major responsibility for either (a) writing design or (b) coordinating writing of design	5	0	Contributes to written statement	5	0
Clarifies issues in written design	19	0	Refines design	13	3	Clarifies issues in written design	7	0
Questions overall feasibility of design	7	0						

Table IV-6 displays the frequency of team member behaviors related to specified role functions during data collection. The California teachers demonstrated many more role-relevant behaviors during the team meetings than the Vermont teachers. In considering these differences in teacher contributions across the teams, the participation of the California teachers as research subjects, whereas the Vermont teachers did not serve this role, should be noted. Further, in reviewing these data, it should be remembered that the reported

Table IV - 6
Frequency of Occurrence of Behaviors According to Team Member Role
Data Collection

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Assists in data collection in own classrooms, others' classrooms, or both	14	7	Provides standards for data collection	17	23	Assists in data collection	12	16
Monitors data collection to determine validity and reliability	11	6	Provides clear set of data collection procedures	9	13	Takes responsibility for training non-team data collectors	15	19
Monitors data collection in regard to preservation of classroom ecology	5	3	Coordinates the distribution and subsequent record keeping related to materials used in data collection	18	14	Coordinates efforts to gain access to non-team classrooms/schools	25	11
Keeps accurate records of data collection	9	5	Monitors data collection	19	12	Keeps records of process as possible training vehicle	13	8
If necessary, assists in training of non-team data collectors	11	6	Takes major responsibility for keeping data and storing them	21	13	Assists in refinement of data collection, if necessary	8	13

behaviors represent coding of audio-recordings from team meetings. Based on self-reports from team members, the behaviors coded during meetings for data collection, data analysis, and formulation of conclusions are fewer than the number that actually occurred.

The Vermont researcher attended somewhat more to standards for data collection than did the California researcher who carried out more coordinating and monitoring functions than his Vermont counterpart. There were more occasions in team meetings in which the California researcher assumed responsibility for keeping and storing the data than for the Vermont researcher. The Vermont trainer/developer showed more instances of assisting in data collection than the California trainer/developer who demonstrated more effort related to gaining access to non-team classrooms/schools. There also were more instances of talk by the California trainer/developer related to using the research process as a possible training vehicle but fewer instances than the Vermont trainer/developer regarding assisting in data collection refinement.

Table IV-7 shows the number of times during team meetings role members discussed issues, made contributions, etc. related to data analysis. The California teachers referred to data analysis somewhat more than their Vermont counterparts. In fact, the team meetings monitored for this phase of the research effort indicated that issues related to data analysis received consistently more attention across all roles for the California team than for the Vermont team. In only

Table IV - 7
Frequency of Occurrence of Behaviors According to Team Member Role
Data Analaysis

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Assists in Data Analysis	64	53	Provides alternate modes of data analysis	9	0	Assists in data analysis	22	16
Provides criteria for analysis based on own classroom knowledge and experience	23	12	Decides, with others, modes of analysis to be used	15	8	Monitors analysis in light of criteria provided by researcher, teacher	5	14
Provides unanticipated modes of analysis	4	0	Takes major responsibility for coordinating analysis	13	13	Keeps record of process as possible training vehicle	17	7
Determines applicability of analysis to issue under study	5	2	Takes major responsibility for reporting (in writing) the analysis(es)	21	14	Checks analysis procedures and findings against perceptions of Tier II research participants	12	0
						Takes major responsibility for feedback of consequences of analysis to Tier II participants	32	12
						Discusses and follows up with others the possible training/development potential of findings	21	12

one role function, trainer/developer monitoring of the analysis in light of criteria provided by the researcher or teachers, did the Vermont trainer/developer make more references to the issue than her California counterpart.

It is noteworthy, given the intentions of IR&DT, that the teachers appeared to be involved significantly in the data analysis. It will be recalled that one assumption of IR&DT is that teacher involvement at this stage is critical for the maintenance of credibility and utility of both procedures and findings.

Table IV-8 shows the number of behaviors as demonstrated by coded team talk which were related to the formulation of conclusions based upon the research. It was initially speculated that the three roles -- teacher, researcher, trainer/developer -- might prepare separate research reports. As the teams' research projects were concluded, however, it became apparent that one formal research and one formal training report would be forthcoming from each team although in addition, the California teachers provided supporting and explanatory case studies, the California researcher provided a description of the evolution of the study, and the Vermont researcher prepared supporting case studies for each classroom that was studied. The word "draft" in the figure is to be interpreted broadly, i.e., when team members offered fairly extensive arguments or discussions related to conclusions, those arguments/discussions were noted as "draft" even though they may not have been in written form. As has been true for many, if not most, of the role functions, the California team demonstrated more of the speculated appropriate behaviors than the Vermont team, with one exception, seeking technical assistance. (See the next section of this chapter for a discussion of the frequency and nature of technical assistance sought by the two IR&DT teams.)

Table IV - 8
Frequency of Occurrence of Behaviors According to Team Member Role
Formulaton of Conclusions

Teacher	CA	VT	Researcher	CA	VT	Trainer/Developer	CA	VT
Provides draft* of conclusions based upon knowledge and experience from teaching and participation in the research process	6	0	Provides draft of conclusions based on knowledge of research design and methodology	6	6	Provides draft of conclusions based on potential utility for development/training	12	8
Provides criteria against which to measure the conclusions' validity for classroom life	13	6	Takes major responsibility for coordinating the formulation of conclusions	15	12	Participates with others in speculation of the implications of conclusions as related to training/development	17	11
Participates with others in the speculation of implications of the conclusions for teachers and teaching	27	12	Provides criteria drawn from research methods and practices against which to judge conclusions	10	7	Takes major responsibility for checking conclusions against perceptions of non-team persons	0	4
			Participates with others in the speculation of implications of the conclusions for research design and methodology.	4	0	Takes major responsibility for developing and implementing a feedback mechanism for non-team participants in the research process (Tier II teachers)	13	9
			Seeks technical assistance as needed by team	9	16	Begins to consult with team members regarding content and form of development/training vehicles based on research and shared experiences.	15	15

*"Draft" is interpreted liberally in that informal presentations, oral or written, are included.

Conclusions Related To IR&DT Team Member Interaction

It is possible to offer several conclusions regarding IR&DT team member interaction based on the information presented above. In presenting these conclusions, there will be no attempt to relate them to other components of the IR&DT study, e.g., quality of research and training outcomes, attitudes toward research and development on teaching, site effects, and individual effects. Such speculations are offered in Chapter Seven.

Given the findings relative to team member interactions, its reasonable to conclude that:

- Teacher members of the two IR&DT teams gained the attention of the teams, when considered as one role group, more than the other two roles, researcher and trainer/developer.
- As individual members of the teams, researchers gained the attention of the other team members with more frequency than did the other individual members.
- Researchers on the teams participated more heavily largely, though not entirely, because of the explicit and implicit demand for their research skills and knowledge.
- Trainer/developer members of the teams participated at a level somewhat greater than that of teachers when considered as individuals.
- More experienced teacher members of the teams participated at a higher level than less experienced teacher members during initial stages of IR&DT and more equally at the end of the implementation period.
- There was explicit and implicit agreement on both teams that the research strategies to be employed would be largely naturalistic.
- Teacher perspectives were dominant in the selection of the question/problem to be researched.
- Teachers contributed the questions which were eventually chosen for study by both teams.
- Researchers contributed more heavily once the research question was agreed upon than any other individual team member.

- The California team was more consistent and persistent than the Vermont team in dealing with the research and development activities that followed selection of the research question.

- The California team demonstrated more research-relevant talk than did the Vermont team.

- The Vermont team demonstrated more IR&DT-irrelevant talk than did the California team.

- The Vermont team devoted time to training and development issues that were outside the IR&DT framework, i.e., unrelated to the team's research or the training that was designed and conducted.

- Both the California and Vermont teams devoted their largest research-related attention to the identification of the question to be studied.

- When all talk segments that were coded are considered, the California team devoted most attention to the identification of the research question whereas the Vermont team devoted most attention to its own group procedures.

- The California team demonstrated a close approximation of all the research steps in the sequence proposed by Far West Laboratory whereas the Vermont team did so only for data collection, data analysis, and formulation of conclusions.

- Far West Laboratory was the object of the Vermont team's attention to a markedly higher degree than for the California team.

- Both teams attended to their group processes to a high degree, with the California team tending to do this at the first meetings held in September 1977 and with a sharp drop thereafter, whereas the Vermont team maintained a relatively high degree of such attention throughout IR&DT implementation.

- The California team demonstrated far greater numbers of the specified role functions during the research phase of IR&DT than the Vermont Team.

- The Vermont team engaged in more instances of reiteration of research steps than did the California team.

- The California teachers and trainer/developer participated much more actively in the preparation of the written research design and research report than did their Vermont counterparts.

- There is little evidence in the audio-recordings of the Vermont team meetings that persons other than the researcher contributed heavily to the final written research design or the final research report.

- The California research report appeared to be influenced directly by all team members with some greater responsibility taken by the researcher.

- The California team engaged more actively in the process of verification and justification of their research question, data sources, and data collection procedures in their own classrooms and in other settings than the Vermont team.

- Teacher participation in the refinement of the written research design and final research report was high on the California team and low on the Vermont team.

- The specified role functions for each research step were found to be present to some extent across all research activities for both teams.
- Teacher members of both IR&DT teams were involved actively in data analysis.

- Behaviors in addition to those role functions initially postulated for each team member emerged out of the teams' deliberations.

- The replacement of the original trainer/developer on the Vermont team appeared to be related to a marked shift toward more task orientation on the part of the team as a whole.

- The development phase of IR&DT was delayed by both teams until much of the research effort had been conducted.

- Development designs were influenced directly by the teams' research but appeared to be written primarily by the trainer/developer on both teams.

- Development (training) carried out by both teams was influenced heavily by the research procedures used by the teams.

- The California development (training) effort appeared to be influenced more directly by the team's research findings than the Vermont development (training) work.

Technical Assistance

As with any research and development effort, the two teams participating in the implementation of the IR&DT strategy were expected and encouraged to consult with others as they conceptualized and carried out their respective r and d activities. Whenever assistance and guidance were sought from Far West Laboratory staff members, these requests were documented. If a request was made via a telephone call, a summary of the call was prepared. Copies also were obtained of all written correspondence requesting assistance and/or responding to such requests. Memos were prepared summarizing and describing all on-site consultation. The discussion that follows reports the technical assistance requirements as they were described in these records. Since the team members asked for different amounts of assistance at different stages in the r and d process, the data are reported according to five periods of activity: (1) from site and participant selection through orientation of teams, (2) from identification of their respective research questions through completion of their research designs, (3) data collection and data analyses, (4) from preparation of their respective training designs through conduct of training, and (5) preparation of research and training reports. Analysis of these findings provides insight into the self-sufficiency and expertise of the persons who participated in this particular implementation effort. It also suggests the type of external support that may be needed by future IR&DT teams.

Site and Participant Selection through Orientation

The Chapter Three discussion of team member recruitment indicated that Far West Laboratory staff played a significant role in the selection of the California team. They explained the IR&DT strategy to individuals throughout the school district, interviewed potential team members, and, in collaboration with the school district's director of inservice education, selected the team members. All these activities may be viewed as technical assistance to the site inasmuch as similar types of information and assistance most likely would be required if another site were to undertake an IR&DT effort. Further, the more uninformed a site is regarding the essential features and requirements of IR&DT, the more important such assistance may be.

Table IV-9 summarizes the sequence of technical assistance events that occurred between Far West Laboratory staff and persons associated with the California site during site and participant selection. A total of 27 technical assistance contacts were made. Surprisingly, only three contacts were related to site selection. This can be explained, in large part, by the Laboratory's previous involvement with the school district whereby relationships with the director of inservice education and the School I principal already had been established. It also attests to the high level of interest in and support for the project shown by the school district administration.

Eleven contacts were oriented toward participant selection including seven on-site meetings between Far West Laboratory staff and candidates for the teacher, researcher, and trainer/developer positions. These person-to-person interactions served both assessment and explanatory functions. Laboratory staff obtained information regarding the skills and knowledge of potential participants and the participants asked questions about the IR&DT strategy and the roles and functions they would be expected to serve in the implementation effort.

Administration-related technical assistance activities were minimal. A total of four occurred, two related to subcontract budgetary matters and two involving logistical arrangements at the school sites.

As the date neared for Far West Laboratory's orientation of team members, several preparatory technical assistance activities were carried out. Team members were interviewed to obtain information regarding their views of and knowledge about educational r and d. Information packages were sent to team members. The orientation session itself, which was described in detail at the

Table IV - 9
Technical Assistance - California IR&DT Team
Site and Participant Selection through Participant Orientation

Date	Technical Assistance Activity			
	Administration	Site Selection	Participant Selection	Orientation Related
4/15/77		Telephone contact with Director of Inservice Ed., San Diego Unified School District by FWL staff. Would San Diego be interested in IR&DT? Director of Ins. Ed. agrees to set up meeting.		
4/ /77		FWL staff meet in San Diego with Dir. of Ins. Ed., Director of Elem. Ed. for one of school district geographic areas, principal of School I.		
5/2-3/77		FWL staff meet with principals of School I and II.	FWL staff meet with faculty of School I and with candidates for researcher and trainer/developer positions on IR&DT team.	
5/9/77			FWL staff meet with faculty of School II. FWL staff interview 3 teachers at School I who expressed interest in IR&DT.	Principal of School I inquires regarding his role in project. FWL staff suggest he be supportive of teachers who are interested.
5/11/77	Telephone conversation with Dir. Ins. Ed. re subcontract budget matter			
5/12/77			Additional descriptive material regarding IR&DT sent to principals of Schools I and II to circulate to teachers. (Some material already had been distributed at faculty meetings.) Copies sent to Dir. Ins. Ed. and candidates for researcher and trainer/developer.	
5/13/77			FWL staff telephone conversation with School II principal regarding interested teachers.	
5/18/77			Presentation by FWL staff to primary level teachers in School II. Dinner meeting with 3 teachers from School I. All agreed to join team. Dates for orientation set -- Aug. 24, 25, 26.	

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Table IV - 9 (continued)
Technical Assistance - California IR&DT Team
Site and Participant Selection through Participant Orientation

Date	Technical Assistance Activity			
	Administration	Site Selection	Participant Selection	Orientation Related
5/19/77	FWL staff meet with Dir. Ins. Ed. regarding financial arrangements.		FWL staff interview 4 teachers in School II. All are upper grade teachers. Researcher candidate agrees to participate.	Elem. Ed. Director asks how things are going.
5/20/77			FWL staff telephone teacher (grades 3-4) at School II inviting her to participate. Person interviewed for trainer/developer contacts FWL to indicate he would like to participate.	
5/23/77			Other teachers at School II sent thank you letters by FWL explaining problems associated with grade level spread made it difficult to involve them. School II principal receives copy of letters.	
5/27/77			California team completely staffed. FWL contacts team members to indicate baseline interviews will be conducted 6/2 and 6/3.	
6/2/77	School I principal arranges to release teachers for interview. Discussed IR&DT project with school secretary.			Baseline interviews conducted by FWL evaluator -- School I teachers, School II teacher. Dinner meeting with California IR&DT team except Teacher C-2, who was ill.
6/3/77				Pick up interview with Teacher C-2. Interview researcher and trainer/developer
8/9/77				Pre-orientation package sent to California team by FWL staff
8/19/77				Telephone call from researcher indicating he had not received package. Asks what materials he might find locally, e.g., Life in the Classroom.
8/24-25-26/77				FWL staff conduct orientation session for California team.

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beginning of this chapter, represented a major technical assistance effort. As noted in the team members' responses immediately following the session and at the end of the IR&DT Study, orientation was considered essential to understanding the team member roles and responsibilities and the r and d expectations associated with the strategy.

In Vermont, little interaction occurred between Far West Laboratory staff and the acting dean of the University of Vermont, College of Education and Social Services or other persons at that site during site and participant selection. As noted in Chapter Three, the researcher and the initial trainer/developer on the Vermont team recruited and selected the school district/school site and the teacher participants. The researcher contacted the Laboratory in April and May 1977 to describe the recruitment procedures being used and the teachers being considered as participants and to indicate which site and teachers had been selected. Otherwise, until the time of the Far West Laboratory orientation of the Vermont team on August 14-17, 1977, the only contacts that occurred between Far West Laboratory staff and the Vermont team were two written communications related to subcontracting arrangements with the college and one written request asking the acting dean to check team member availability for orientation. As with the California team, the Vermont team found the orientation session useful but would have liked to have had a longer time to absorb, ask questions about, and react to what was presented.

Identification of Research Question through Research Design

Identification of a research question was the first r and d activity undertaken by each IR&DT team. As such, the teams might be expected to seek frequent assistance from outside sources during this process.

Table IV-10 indicates the types of assistance requested by the California Team. September 1977 was their initial month of IR&DT implementation. During this month, 10 requests related to administrative matters were submitted. Several of the contacts dealt with where the project would be placed within the school district for administrative purposes. Because the team felt the r and d process and outcomes would have the highest potential impact upon the staff development efforts of the district if it were placed in the Inservice Education Division, they (particularly the researcher and trainer/developer) were concerned when it was assigned to the Elementary Education Division. Far West Laboratory staff attempted to support the team's position but were unable to change the assignment. However, they did help organize a steering committee for the project on which the director of inservice education served. The other administrative matter that required assistance and negotiation was obtaining audiotape recorders for the team members.

All other interactions of a technical assistance nature during September were related to identification of the research question. The researcher made two requests for literature references and two suggestions regarding schedule. The trainer/developer and director of inservice education talked with Laboratory staff four times to get their reaction to the question the team was considering.

As the team moved from identification of the research question (problem) to the development of the research design, their requests fell into a "critique and reaction" category. For example, on October 25, 1977, the team requested Laboratory staff to review the proposed data collection strategies and on November 1 they requested a review of a preliminary draft of a research design. On one occasion, October 6, the researcher asked that Far West Laboratory staff who were coming to San Diego to observe in the classrooms of Teachers C-1, C-2,

Table IV - 10
Technical Assistance - California IR&DT Team
Identification of Research Question through Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
9/2/77	FWL staff telephone conversation with trainer/developer regarding audiotape recorders for team members to record meetings and other comments. Discussion of how to handle requests for payment for team members' time spent outside school hours. School district does not have payment system worked out yet.				
9/6/77		Researcher requests documents from ERIC on teacher enthusiasm and teacher expectations. Researcher thanked FWL for sending researcher role description. Had found it helpful.			
9/19/77	Telephone call from researcher regarding concern that project will be assigned to Elementary Ed. not In. Serv. Ed. Division of school district. Researcher notes some administrative requests are included on audiotape recordings of team meetings. Team finds yellow contact sheets redundant, requests including data in logs only.	Researcher indicates concern about having question by October deadline. Researcher requests additional documents from ERIC (uses FWL ERIC Library). Researcher suggests starting 1 month earlier so initial question search can be done before teachers are involved with classroom responsibilities.			
9/19/77	FWL staff contacts Dir. of Ins. Ed. regarding assignment of IR&DT project. Assoc. Supt. will decide.				

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Table IV - 10 (continued)
Technical Assistance - California IR&DT Team
Identification of Research Question through Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
9/21/77	Team needs more audiotape recorders Questions regarding budget and mileage reimbursement.	Trainer/developer calls FWL seeking feedback re exploring the nature of interruptions teachers put up with every day and strategies teachers use to get students back on task. Are they on right track? Trainer/developer indicated team enthusiastic about question. Discussed with Dir. of Ins. Ed. He likes it. Teachers verifying with colleagues.			
9/22/77	Team calls again re audiorecorders Trainer/developer agrees to ask district budget office about mileage.				
9/26/77	Dir. of Ins. Ed. calls to say IR&DT project is in Elem. Ed. Division. Suggests having steering committee for project on which Dir. Ins. Ed. serves.	FWL staff communicates enthusiasm for team's question to Dir. Ins. Ed. Dir. Ins. Ed. indicates potential of question for training administrators as well as teachers.			
10/6/77	FWL observations in teachers' classes scheduled. California team to purchase two audiorecorders and bill FWL.				
10/6/77		Researcher expresses concern that FWL participation in team meeting would distort team's thinking re research question.			
10/17/77	School I principal expresses desire to know in advance when FWL coming to observe, etc.				
10/19/77		Team sends question in "semi-final form."		Team requests delay on data collection methods until 11/4 or 5.	

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Table IV - 10 (continued)
Technical Assistance - California IR&DT Team
Identification of Research Question through Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
10/19/77				FWL requests communication regarding data collection via telephone 10/31.	
10/20/77	FWL discussion with researcher to arrange weekly time schedule to include Saturday meeting hours. Informed Calif. team of IR&DT newsletter. Reminded team of meeting with National Advisory Panel (NAP)				
10/24/77				Calif. team sends first preliminary thoughts re data collection for reaction.	
10/25/77	Trainer/developer asks about why FWL needs weekly schedule.	Trainer/developer and researcher asked to attend school district meeting regarding "time on task."			Trainer/developer asks if FWL knows of training models/materials dealing with distractions.
10/25/77	Questions regarding substitute teacher arrangements.			FWL staff review data collection strategies with researcher via telephone. Researcher requests technical assistance in how to collect ethnographic data.	
11/1/77		Team attends administrator meeting regarding "time on task" sponsored by school district. Team obtains useful information, notices administrators paid little attention.	FWL staff reviews questions, data collection, preliminary research design with researcher and trainer/developer. FWL recommends not overloading data collectors, indicates need more precise definitions of "effective" strategies, also of "distractions"; need to think more about what "on-task" behavior is; need to use other teachers, not just those on team. FWL to send examples from other studies.		Trainer/developer informs FWL interested in training for administrators as well as teachers

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Table IV - 10 (continued)
Technical Assistance - California IR&DT Team
Identification of Research Question through Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
11/2/77					FWL informs trainer/developer could find no training materials on how to reduce distractions in classroom.
11/4/77				FWL sends team examples of ethnographic observation data, one for observation during math period in 4th grade class on consecutive days, one for all day observation.	
11/10/77			FWL staff meets with California team to review research design. (Meeting in San Diego.)		
12/1/77				Researcher requests names of contact persons at University of Calif., San Diego who are involved in ethnographic research.	
12/8/77			N A P critique		
12/9-12-13/77				FWL trains researcher and trainer/developer in use of ethnographic data collection.	
12/13/77	Summer 1978 work schedule discussed with researcher and trainer/developer		Researcher and trainer/developer request to use persons in San Diego area to help in refining design.	FWL staff and researcher, trainer/developer discuss use of cordless microphone; agree Calif. team will try it out. FWL and researcher, trainer/developer discuss advantages/disadvantages of using teachers or sociology majors as observers	FWL discusses training design schedule with trainer/developer.
12/19/77			Team receives minutes of NAP meeting.		
12/29/77			Researcher contacts FWL regarding Calif. team's response to NAP recommendations re research design. FWL suggests send letter indicating how intend to respond or if not accepting recommendation, why not.		
1/23/78			Team submits revisions in research design.		

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C-3 and C-4 not participate in a team meeting for fear the Laboratory representatives would "distort the team's thinking regarding the research question."

Although the team as a whole was not as yet giving much attention to the training program that would build from their research, during this early period of activity the trainer/developer made three contacts related to this facet of their work and the Laboratory initiated one interaction regarding the schedule for developing the training design.

On November 10, 1977, two Far West Laboratory staff members met with the entire team to critique their research design prior to submitting it for review to the National Advisory Panel (NAP) for the IR&DT Study. The NAP conducted a critique of the design with the researcher and a teacher from the team on December 8, 1977. (The role of the NAP is discussed more thoroughly in the next section of this chapter.)

Another large-scale technical assistance activity provided to the California team by Far West Laboratory was training of the researcher and trainer/developer in qualitative (ethnographic) research techniques. Since the teachers on the team had insisted that naturalistic data be collected as part of the research study and the researcher had little, if any, background in such methodology, he requested such assistance on October 25, 1977. The training was conducted December 9-12, 1977, which was prior to the start of data collection.

September 1977 also was the first month of IR&DT implementation for the Vermont Team. During this month, 13 contacts occurred between Far West Laboratory staff and the team relative to administrative matters (see Table IV-11). Two contacts occurred regarding identification of the research question. One contact from the acting dean of the University of Vermont, College of Education and Social Services dealt with the use of the IR&DT strategy in a proposal for a teacher training program being prepared by the college.

Table IV - 11
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
8/18/77	Researcher and trainer/developer call to discuss college schedule. Researcher and trainer/developer share subcontract scope of work with Director of Teaching/Learning Program at College. Team installs separate telephone line into School III.				
9/6/77	Telephone call from Vermont team regarding payment for time spent at orientation session.				
9/6/77	FWL telephone contact with researcher re audio recorders.				
9/7/77	Teacher V-1 calls FWL to give teachers' home telephone numbers. Teacher V-1 says Vermont team has enough audio recorders.				
9/12/77	Researcher calls FWL to see if subcontract has been returned by University. University has not set up billing procedures. Asks about orientation session per diem checks.				
9/19/77	FWL contacts acting dean re subcontract. He says has been approved by University				Acting dean suggests using IR&DT in a proposal for a Teacher Corps project to be submitted by College of Ed. and Social Services
9/19/77	FWL calls Vermont researcher to tell him paper processing procedure that has been worked out with University. Also to assure researcher monies are there to use.	FWL staff and researcher discuss use of ethnographic protocols of teacher-student interaction in classes of teachers on team. FWL suggests use them as source of potential research question. FWL cautions not to apply professor's view of "how it ought to be."			

FWL = Far West Laboratory for Educational Research and Development

Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
9/22/77	FWL contacts Teacher V-1 to set up schedule for FWL observations in classes of teachers on team.				
9/27/77	FWL calls Vermont researcher to find out if tapes of team meetings have been sent to FWL. Researcher relays team's reluctance to keep logs.	Researcher reports analysis of protocols (as per FWL suggestion) generates enthusiasm for exploring quality and quantity of teachers' ignoring behavior.			
10/4/77	Teacher V-2 calls to verify dates for FWL observation. Teacher V-2 asks about how to get reimbursement for mileage. FWL suggests they work through acting dean's office.				
10/4/77	Researcher indicates concern about relationships with trainer/developer. FWL suggests all team members look at role descriptions they have beeen given. FWL asks team to report schedule of IR&DT activities for past 3 weeks so can review to determine if devoting excessive time to the project or need to negotiate more time for project with University.	FWL calls researcher to ask about research question. FWL suggests team needs to be concerned about validity of question, should check it out with other teachers. FWL tells researcher it is his role to insist on such a check. Researcher says he cannot find anything in literature on ignoring behavior. FWL suggests deciding what it is not may help tighten definition so can find references. FWL suggests looking at work of Kounin and Gump.			
10/5/77	Teacher V-1 calls to set up conference telephone call. Teacher V-1 asks about delaying 10/15 due date for question. FWL encourages team to get question in on time. Teacher V-1 says need more audiotapes and envelopes.				

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
10/6/77		FWL conference phone call with Vermont IR&DT team regarding research question and need to check it out with people not on the team.			
10/7/77	Researcher indicates he and trainer/developer are meeting with acting dean. Topic will be trainer/developer's role with the team.	Vermont researcher calls FWL to discuss validity check regarding research question. FWL suggests team take examples and non-examples to the field. Also suggests team ask other teachers what their concerns are without limiting to current question.			
10/10/77	Trainer/developer requests information brochure he could use to explain IR&DT to other teachers. Trainer/developer reiterates team's dissatisfaction with logs.			Trainer/developer requests information to help explain quantitative data to teachers on the Vermont team.	
10/11/77		Researcher calls FWL to discuss procedures team plans to use for validity check. It will include 5 questions and request for other teachers' views re payoff. Trainer/developer and researcher will administer instrument to teachers and college of ed. colleagues.			
10/12/77		Researcher calls FWL to report team's research question: "How do students' perceptions of the affective climate in the classroom compare with teacher's perception of that climate?" Indicates question was of interest to 45% of teachers surveyed.			

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
10/13/77		FWL calls researcher to indicate question sounds "good." Suggests team needs to delimit scope of question. Researcher thanks FWL for sending Doyle article re ecological perspective of classroom.		FWL suggests sources for measuring affective climate including teacher test of tolerance and student test of survival.	
10/18/77				FWL sends researcher copy of tests of teacher tolerance and student survival.	
10/19/77	Telephone call from acting dean to FWL to report meetings with researcher and trainer/developer. Trainer/developer resolving his concerns and becoming more clear regarding his tasks. FWL indicates will make IR&DT newsletter available to college. FWL inquires re secretarial assistance for Vermont team. Acting dean says no one hired as yet.	FWL and acting dean discuss his role in refinement of research question. FWL suggests need to define what is meant by "affective climate."	FWL asks about classrooms to be studied. Will Vermont team seek classrooms where there is dissonance or consonance, or both between teacher and student perceptions of affective climate? How will classrooms be identified? FWL indicates importance of tying classroom variables to student outcomes.	FWL expresses concern re instrumentation to measure "affective climate."	
10/24/77	FWL calls to schedule Nov. 15, 16, 17 site visit to Vermont team.				
10/24/77		FWL sends team a letter outlining FWL's understanding of what will be studied as per team's question.	In letter FWL suggets team needs to define variables that make up affective climate; what they are and are not talking about. FWL suggests need to do a literature search regarding classroom climate. FWL asks team to consider research sample and how to get it. Use of preliminary observation is recommended. FWL suggests need to consider student outcomes. FWL asks subject areas to be included.		

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
10/25/77	Researcher indicates is becoming more "assertive" in team meetings. Trying to keep team on topic of research.	FWL suggests team review values clarification literature and work of Bussis, Chittenden, Amarel to make question more specific.	Researcher calls to discuss parameters of affective climate.		
10/25/77	FWL calls Teacher V-3 to ask when her work schedule for previous weeks will be sent. FWL asks Vermont teachers to get substitutes for site visit days. Teacher V-3 not interested in doing so.				
10/25/77	FWL calls trainer/developer to remind about schedule he was to send to lab.				
10/26/77			Researcher calls to request conference call regarding research design.		
10/27/77			FWL calls researcher to suggest reading Bloom's new book to get ideas regarding student outcomes.		Researcher makes presentation to college administrators.
10/27/77	Acting dean calls FWL to inform that trainer/developer has resigned.				
10/31/77	FWL - Vermont discuss need to obtain a new trainer/developer. Asked to attempt to find one by 11/15. FWL asks which teacher is coming to meeting with NAP.		FWL - Vermont conference call regarding characteristics of classrooms to be studied. FWL indicates has sent information regarding climate and affect variables that should help team narrow focus of study. Teacher V-3 indicates dimensions should come from teachers who are in the study. FWL says cannot extend deadline for completing research design.	FWL raises issue of validity and reliability of measures that are used.	

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
11/4/77	Team calls to tell FWL a speaker telephone has been installed; requests audiotapes, envelopes, mailing labels.				
11/7/77	Researcher calls to indicate team will interview new trainer/developer.		Researcher calls to request literature citations regarding "affective" aspects of classroom. FWL refers him to ERIC and Education Index		
11/7/77	Teacher V-2 calls to set up schedule for reorientation of team with new trainer/developer.				
11/9/77	Vermont team calls to say new trainer/developer selected.				
11/16-18/77	FWL provides orientation for new trainer/developer	FWL meets with team to clarify and specify research question.	FWL meets with team to specify research design.	FWL meets with team to consider data sources and ways to measure them.	
11/18/77	Vermont team contacted and requested to complete and return questionnaires regarding question generation phase of implementation.				
11/23/77				Researcher and trainer/developer receive schedule for training in ethnographic data collection techniques.	
11/23/77	Vermont teachers asked to review FWL reports of observations in their classrooms.				
12/3/77			Vermont team submits research design.		
12/8/77			NAP critique of research design		
12/9-10-12-13/77				FWL trains researcher and trainer/developer in ethnographic data collection.	

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
12/9/77			FWL staff meets with rsearcher to report NAP critique of research design. Identifies need for major revision. Gives team 3 options: modify and improve present design, do new one, scratch team and start over with question generation.		
12/12/77		FWL tells researcher and trainer/developer doubt that question is teachers' question.	FWL reviews meeting with NAP with trainer/developer and researcher. FWL discusses options to be outlined in letter to team. Indicates FWL not anxious to drop project and option 1 is undesirable (reworking present design).		
12/13/77			Researcher and trainer/developer tell FWL prefer Option 3. New team and new question. FWL, researcher and trainer/developer set up schedule to carry out Option 3.		
12/13/77	FWL requests decision re future of Vermont project by 12/19/77.		FWL sends letter to acting dean outlining concerns raised by NAP. FWL suggests options available to team, one of which is to terminate IR&DT project.		
12/15/77	Teacher V-1 calls to request more tapes, envelopes.				
12/16/77			Researcher calls FWL to report team's initial reaction to FWL letter.		
12/19/77	FWL sends Vermont team copy of minutes of 12/8/77 NAP meeting.				

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Table IV - 11 (continued)
Technical Assistance - Vermont IR&DT Team
Identification of Research Question through Initial Version of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
12/20/77		Teacher V-1 reports team is staying with present question.	Teacher V-1 reports team has opted for redoing present design.		
12/20/77	FWL sets 1/15/78 as deadline for receipt of acceptable question and research design.	FWL calls acting dean to verify team's decision and discuss risks associated with keeping same question.			

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The Vermont team's concern about administrative matters continued into October when 23 such interactions took place. Of these, seven were associated with problems the trainer/developer was having, his eventual resignation, and recruitment of another person for the position. Laboratory staff served as listeners and advisers throughout these events.

During October, Far West Laboratory staff also were asked on 14 occasions to react to the question identification process or to the questions the team was considering. Laboratory staff provided input/raised questions regarding the team's research design on 14 other occasions and discussed data collection procedures five times. Two conference telephone calls were held involving the entire team. Most of the other contacts were with the researcher via telephone.

In November 1977, Far West Laboratory staff went to Vermont to orient the new trainer/developer. At that time, a two-day work session also was held in which the Laboratory staff critiqued and raised questions regarding the team's question, research design, data sources and data collection techniques.

The NAP critiqued the Vermont research design on December 8, 1977. Their unanimous opinion (see discussion in next section of this chapter) was that the design was unacceptable as submitted. As a result, the Laboratory staff and the Vermont researcher, who was in San Francisco to attend the NAP meeting and participate in the same qualitative research training provided to the California researcher and trainer/developer, and the new Vermont trainer/developer, who also was brought to San Francisco by the Laboratory to participate in the qualitative research training, engaged in three person-to-person discussions regarding options for responding to the NAP critique. Five additional interactions occurred via telephone and/or mail before the team decided upon a response.

Thus, by mid-January 1978, 104 technical assistance contacts occurred between Far West Laboratory staff and the Vermont IR&DT team. In the same time period, 52 contacts occurred between the California IR&DT team and Laboratory staff. It is not known if the extent to which such a large number of contacts were made was merely because Laboratory staff were available and/or because the assistance was essential to the teams' progress. Regardless, it appears that IR&DT teams require extensive technical assistance as they initiate r and d activities and develop a research design. As might be expected, the team with more experienced and skilled members did not appear to require as much assistance as the less experienced and skilled team. But both the teams in this study requested (needed) assistance of an administrative, advice, review and critique nature.

As a result of the NAP recommendation that the research design submitted by the Vermont team be reworked and resubmitted for another review prior to starting data collection, the team recycled through the research design phase of their r and d effort. This encompassed approximately a two-month period from December 21, 1977 until February 27, 1978. As described in Table IV-12, technical assistance was requested and/or provided on an additional 25 occasions during this time. Twelve contacts were related to the research design itself,

Table IV - 12
Technical Assistance - Vermont IR&DT Team
Revision of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
12/21/77	FWL extends date for submission of revised research design to 1/20/78		Researcher and trainer/developer indicate team members are sending letters stating commitment to question and to redoing design.		
12/22/77	Vermont team indicates problem with keeping up logs.	Conference call with Vermont team. FWL indicates current question is "fuzzy". Refers team to NAP's suggestions.			
12/22/77	FWL sends Vermont team a letter specifying steps to complete revision of design. Reminds team to adhere to roles and responsibilities outlined for various team members during orientation.				
1/5/78		Vermont teachers observe in other classrooms to verify question.	Researcher calls to tell FWL team has outlined new design.		
1/6/78		Conference call with researcher and various FWL staff to review new version of question.	Researcher indicates teacher mood will be independent variable and gives definition. Dependent variables described. FWL suggests making teachers aware of relationship between mood and teaching behavior not just mood. FWL asks if investigating relationship with any student behavior, other outcome variables.	Researcher informs FWL how will measure teacher mood. FWL asks if will obtain observer estimate of teacher mood. FWL recommends use of non-participant observers. Researcher asks when observations should be made. FWL recommends most and least favorite subject areas.	
1/10/78				Researcher requests literature references on use of "critical incidents" in research studies.	
1/18/78	Researcher calls to update on progress with revision.		Researcher requests literature reference: Calloway, "The Silent Classroom."		
1/18/78			Vermont team submits response to NAP critique.		
2/2/78			Researcher calls FWL to get feedback re NAP critique.		
2/8/78			FWL sends Vermont team synthesis of NAP and 2 added reviewers' suggestions regarding revised research design.	NAP raises questions regarding revised data collection strategies.	
2/9/78	Acting dean calls to determine if team has approval to continue. Approval given to complete revision suggested by NAP.				

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Table IV - 12 (continued
Technical Assistance - Vermont IR&DT Team
Revision of Research Design

Date	Technical Assistance Activity				
	Administration	Research Question	Research Design	Data Collection	Training
2/19/78	FWL tells Vermont team to submit next revisions by 3/3/78.		Reseacher asks FWL staff further questions re number of observers, what to be observed, when during day to observe, should have observers in classes to get used to setting before begin "official" observations, how can teachers' participant observations be focused, where can team find literature about supportive instructional behaviors.		
2/20/78			Researcher calls to inform FWL cannot find reference recommended by NAP member. FWL suggests researcher call NAP member for exact source.		
2/27/78			Vermont team submits second rewritten design.		

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three to refinement of the team's question, five to data collection procedures, six were administrative in nature, and none related to training. Thus the total number of technical assistance contacts that occurred between Far West Laboratory staff and the Vermont team reached 129 before the team's research design was finally accepted by the NAP.

Data Collection and Data Analysis

Table IV-13 reports the technical assistance provided the California team during the data collection and analysis period. The administrative requests that occurred offer an interesting insight into the impact on school operations of the tax initiative (Proposition 13) passed by the California voters in June 1978. Due to funding restrictions imposed by Proposition 13, most school districts in the state dropped innovative projects that required time and effort contributions by the district. Several interactions between Far West Laboratory

Table IV - 13
Technical Assistance - California IR&DT Team Data Collection and Data Analysis

Date	Technical Assistance Activity		
	Administration	Data Collection	Data Analysis
1/23/78		FWL calls team to ask if need meeting re data collection while FWL staff is in San Diego for other purposes.	
1/26/78		Researcher calls to say team does not need a meeting at this time.	
2/6/78	Researcher calls to request funds transfer so can hire, through consulting agreement, transcriber for audio recordings of ethnographers' observations. FWL approves.		
2/16/78	FWL sends team questionnaire re research design phase of implementation.		
3/3/78	FWL sends team data regarding "interactiveness" of team during question generation, research design phases, suggests ways to improve team's efforts.		
3/8/78	Dir. Ins. Ed. calls to discuss plans for use of trainer/developer time after 7/1/78.		
4/3/78	Dir. Ins. Ed. calls to review options on assignment of researcher and trainer/developer time through 11/30/78.		
4/26/78	Researcher and FWL discuss schedule for June - July - August.	FWL staff meets with team (in San Diego). Researcher and trainer/developer review data collection procedures and data base, talk FWL staff through aggregated data for 8 teachers' first 6 observations. Use of remote microphones reported to be productive.	FWL suggests team use observers and Tier II teachers to help write case studies for each pair of teachers at same grade level. Content of teacher case studies reviewed. Researcher requests assistance from FWL staff member who conducted ethnographic training. FWL says person is not available due to change in assignment. Dir. Ins. Ed. suggests team putting too much emphasis on percent of distractions in certain categories and not enough on what coping strategies seem to be most successful. Also suggests need to look at classroom at broader level to see what features of classroom may be related to distractions per se. FWL asks how plan to use qualitative data.
5/24/78			Reseacher and trainer/developer request help with qualitative data analysis. FWL sends examples of ethnographic case studies done at Laboratory.
6/6/78	Researcher calls regarding need to adjust budget for project due to Prop. 13.		
6/7/78	FWL calls school district finance office to assure subcontract is approved through 11/30/78.		

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staff and the researcher and director of inservice education at the California site dealt with specification of the time the researcher and trainer/developer would devote to IR&DT from June through November 1978 and assurance that this time would be covered in the district's subcontract with the Laboratory. The urgency of approving the subcontract for this work prior to July 1, 1978, when the tightened school district financial situation was expected to result in board of education refusal to engage in innovative programs, also was the subject of two interactions.

The major technical assistance activity related to data collection and analysis was an on-site meeting in April with the entire California team. The data that had been collected were reviewed at that time. Far West Laboratory staff and the school district director of inservice education offered suggestions regarding the organization and interrelationships among data sources that might be considered in the data analysis and discussed a variety of ways to organize the write-up of the research findings.

The California team indicated they did not need technical assistance at one point during data collection when Laboratory staff were available because they were traveling to San Diego for other purposes (see January 26, 1978 listing in Table IV-13).

Table IV-14 indicates the types of technical assistance requested by and provided to the Vermont team from the point at which their revised research design was accepted by the NAP through data collection and analysis. The administrative requests during this time were related primarily to negotiation of the next subcontract with the Laboratory. (As will be discussed later, due to the funding cycles imposed on the Laboratory's master contract, three separate subcontracts were negotiated with each site.) Only two requests were related to data collection. One of these, the May 22, 1978 listing, involved an on-site

Table IV - 14
Technical Assistance - Vermont IR&DT Team
Data Collection and Data Analysis

Date	Technical Assistance Activity		
	Administration	Data Collection	Data Analysis
3/8/78			FWL sends researcher a letter suggesting use of four data sets: ethnographic protocols of classroom observations, mood adjective checklist data, teacher interview transcripts, supportive instructional behavior (SIB) ratings. FWL suggests procedure for obtaining SIB ratings.
3/15/78			Researcher calls FWL to discuss Likert scale for rating SIBs. Asks about whether to rate segment of lesson, whole lesson, or both.
3/21/78	Researcher calls to discuss summer budget in subcontract.		
3/27/78	Researcher calls in figures for subcontract, June-Nov. 1978.		
4/5/78	FWL approves subcontract through 11/30/78.		
4/10/78	Teacher V-1 calls for more audiotape and envelope supplies.		
5/5/78	Researcher checks dates for FWL site visit: 5/22 - 24/78.	Researcher calls to indicate having trouble locating "rural" site. This is delaying beginning of data collection.	
5/16/78	Trainer/developer calls to set up schedule for site visit.		
5/22/78		Update meeting with Vermont researcher, trainer/developer, and acting dean.	
5/23/78			FWL staff and Vermont team review all types of data to be collected in team's study. FWL critiques analysis plan prepared by team. Team proposes dropping Likert scale for SIB rating. Will compare whole lessons only. Will have average mood rating for lesson. Use interview to verify moods.
5/24/78	Tentative work schedule set up for summer months.		FWL staff and Vermont team discuss who will do which analyses.
6/19/78	FWL sends Vermont scope of work for subcontract through 11/30/78.		
7/6/78			Teacher V-3 calls re definition of SIB "attending." FWL staff tell her to use definition agreed to by team and presented in research design.

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Table IV - 14 (continued)
Technical Assistance - Vermont IR&DT Team
Data Collection and Data Analysis

Date	Technical Assistance Activity		
	Administration	Data Collection	Data Analysis
7/6/78			Researcher calls to say having trouble getting team members to agree to SIB definitions. Asks FWL how to make definitions more specific. FWL tells to use definitions in design. Researcher asks FWL staff how to establish reliability of raters of SIBs. FWL suggests conventional approach.
7/6/78	College calls FWL re subcontract budget.		
7/10/78			Researcher calls FWL for assistance in handling "negative flips" on SIBs.
7/12/78			Researcher calls to get suggestions on how to reduce teachers' definition of pacing to specific terms.
7/18/78			Researcher calls to check whether he should do a second inter-rater reliability check. FWL asks what first check indicated. Were raters agreeing or disagreeing? Researcher still having trouble with definitions. Again, FWL tells him to stick with original definitions.
8/28/78			Researcher sends FWL staff set of raw data sheets for each behavior, describes how he intends to compile data for reporting.

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meeting with the team. At this time, refinements were made in the data collection strategy and data analysis plans were discussed and critiqued. Since none of the team members had had experience bringing quantitative and qualitative data together to obtain findings, these work sessions were important to the progress of the research. Requests for assistance continued throughout the data analysis activites. Reliance upon Laboratory staff as a "sounding board" was particularly high as scoring of the narrative descriptions of classroom observations began. As illustrated by the listing in Table IV-14, team members had difficulty agreeing upon the definitions of several supportive instructional behaviors which, in turn, created problems for the researcher. He frequently contacted Far West Laboratory for advice on how to resolve these problems.

Training Design through Conduct of Training

From the beginning of the IR&DT effort, the teams were expected to attend to the ways in which the respective research procedures and outcomes might be used in a training program. However, with the exception of the few occasions in October and November 1977 when the California trainer/developer requested information regarding training materials (see Table IV-10), neither team put much effort into training-related activities until March 1978. At that time, a Far West Laboratory request for the teams' training designs prompted attention to this part of their work.

Table IV-15 reports the technical assistance related to training requested by and provided to the California team by Far West Laboratory staff. Sixteen interactions occurred. Six dealt with administrative matters that were training oriented. Six centered around the training design that was developed by the team. Three were related to the conduct of the training.

Technical assistance related to training was requested by/provided to the Vermont IR&DT team only nine times, eight of which were related to development of the training (see Table IV-16). No assistance was sought regarding the conduct of the training. The one administrative interaction that occurred was related to approval to proceed with the training as outlined in a revised design.

Given the amount of research-related technical assistance provided to the teams as per the earlier discussion, the training-related technical assistance appeared to be limited in scope and frequency. Several plausible explanations for this finding may be offered. Perhaps the team members--the researcher and

Table IV - 15
Technical Assistance - California IR&DT Team
Training Design through Conduct of Training

Date	Technical Assistance Activity		
	Administration	Design of Training	Conduct of Training
3/22/78		FWL reminds team that training design is due 4/15/78. Provides outline for sections to be included in design.	
4/18/78		Trainer/developer calls to say training design is in draft form, indicates Tier II teachers helped with design along with team.	
4/25/78		FWL calls to inquire about design. Trainer/developer states that team requested a second review. He'll not get their comments until today. Will give to FWL when visit team 4/26.	
4/26/78	FWL agrees to type final version of training design.	Team submits training design.	
5/19/78		Team sent sumary of NAP critique of training design. Team asked to submit response by 6/30/78.	
5/24/78	Researcher and trainer/developer call for approval to recruit teachers for training given NIE has not yet approved subcontract.		Researcher and trainer/developer request copies of teacher case studies prepared by FWL to use in recruiting teachers for training program.
6/5/78	FWL asks trainer/developer to push team to consider training issues. Trainer/developer asks to move training to fall so data analyses from research will be complete.		
6/20/78	Trainer/developer calls to say may be snag in bd. of ed. approval of training program due to reaction to Prop. 13.		
7/3/78		Revisions to training design submitted by team.	
7/11/78	FWL informs team should proceed with training.		
7/28/78	FWL asks team to participate in AERA symposium.		Trainer/developer calls to say training will begin 8/29/78. One-third of enrollment already obtained.
8/29/78			Training begins. Trainer/developer reports 42 signed up, could only select 23. Has arranged a second training session later on.

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Table IV - 16
Technical Assistance - Vermont IR&DT Team
Training Design through Conduct of Training

Date	Technical Assistance Activity		
	Administration	Design of Training	Conduct of Training
3/22/78		FWL contacts trainer/developer to remind her design is due 4/15/78. FWL provides outline for the design.	
4/10/78		Trainer/developer calls FWL to indicate wants to mount IR&DT teams throughout Vermont. FWL advises to "think small." FWL suggests separating application of research methodology and application of findings from team's research study into two components when planning the training.	
4/17/78		Trainer/developer calls to describe sections in training design and to say it has been mailed.	
4/28/78		Training design sent by FWL to NAP for review.	
5/18/78		FWL sends Vermont team summary of NAP comments and suggestions regarding training design.	
5/22/78		FWL and Vermont team meet during site visit to review revised version of training design.	
7/31/78		Vermont team submits response to NAP suggestions and revised training design.	
8/8/78	FWL notifies Vermont team to proceed with training.		

FWL = Far West Laboratory for Educational Research and Development

teachers as well as the trainer/developer--felt more secure designing and conducting training than they did designing and conducting research. The experience background of the teams suggests this may be so. The California trainer/developer and Teacher C-3 had designed and conducted several teacher training workshops. The California researcher had evaluated such efforts. Both the researcher and trainer/developer on the Vermont team had designed teacher training programs and had participated in informal evaluations of them. Previous research experience was much less for all the team members.

On the other hand, pressures of time also may have resulted in fewer contacts. At the same time the training designs were developed and the training was conducted, data analysis and report writing were underway for the research studies. The combination of tasks may have given the teams less time and energy to consider "fine tuning" of the training and thus resulted in fewer technical assistance requests.

Regardless, the training programs were developed with the NAP review of the designs serving as the primary source of external review and critique. Few questions were asked by either team as they responded to the Panel's suggestions or carried out the training.

Preparation of Research and Training Reports

Tables IV-17 and IV-18 indicate the types of technical assistance provided to the IR&DT teams as they were writing their research and training reports. For the California team, one review by Far West Laboratory staff and the NAP critique served as the primary substantive external input. Other technical assistance was related to future applications of the IR&DT strategy in the San Diego Unified School District.

Table IV - 17
Technical Assistance - California IR&DT Team
Preparation of Research and Training Reports

Date	Technical Assistance Activity			
	Administration	Content of Research Report	Content of Training Report	Response to NAP Review
8/29/79	Researcher indicates he and teachers are concerned about having enough time to complete reports.			
9/21/78	FWL sends timeline for completion of IR&DT products.			
11/7/78	FWL staff meet with school district staff re use of IR&DT strategy in future inservice work in district.			
11/7/78		Team makes presentation regarding research report to National Staff Development Conference. FWL staff sit in, give them feedback after presentation. Researcher asks about including an Evolution of the Study Report. FWL says it's up to team.		
12/4/78	FWL staff meet with school district staff to outline projects in which might apply IR&DT strategy. FWL encourages Dir. of Ins. Ed. to involve researcher in decisions.		FWL staff, researcher and trainer/developer review status of training report, request trainer/developer to complete evaluation section and submit by 12/8/78.	
12/11/78	FWL sends "thank you" for reports.	Reports submitted to FWL.	Report submitted to FWL.	Reports sent to NAP
1/8/79				FWL sends team NAP comments and recommendations regarding research and training reports.
1/22/79	FWL types and prints final version of reports.			Final version of reports submitted by team.

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Table IV - 18
Technical Assistance - Vermont IR&DT Team
Preparation of Research and Training Reports

Date	Technical Assistance Activity			
	Administration	Content of Research Report	Content of Training Report	Response to NAP Reviews
5/23/78		FWL and Vermont team agree to tentative outline for research report.	FWL and Vermont team agree to tentative outline for training report.	
9/18/78	FWL writes researcher to inquire who will be writing which parts of the research report e.g., case studies and formal report. FWL suggests researcher use teachers on team to help.			
9/21/78	FWL sends Vermont team schedule for review and revision of completed reports. FWL asks team members to be sure they continue logs.			
9/26/78	FWL calls to set up meeting with researcher and trainer/developer in Washington, D.C., 10/18/78.	Researcher indicates he found an error in quantitative data that changes analyses he is reporting.		
10/18/78		FWL staff and researcher critique teacher case study that has been completed, agree to final outline of formal research report.	FWL staff, trainer/developer and researcher review data from conduct of training, agree to major sections to be included in training report.	
11/6/78		Researcher calls FWL for advice regarding methods chapter.		
11/22/78	FWL agrees to transfer subcontract funds to pay for extra time researcher and trainer/developer are putting into report writing.			
12/11/78	FWL sends "thank you" for reports.	Vermont team submits research reports.	Vermont team submits training report.	Reports sent to NAP for critique.
1/8/79				FWL calls researcher to give feedback re NAP review. Report needs new summary data tables, more information on how supportive instructional behavior (SIB) coding was done, questions re lack of variation in mood scores, raises concerns re bias of data as reported.
1/9/79				FWL sends written recommendations regarding revision of research reports and training report based on NAP critique.
1/16/78	Researcher requests 1 day substitute time for teachers to assist in final rewrite.			Researcher indicates NAP critique helpful.
1/20/79	FWL agrees to do final typing on research and training reports.			Revision of research and training reports submitted.

FWL = Far West Laboratory for Educational Research and Development

The Vermont team received similar substantive input from Far West Laboratory staff and the NAP. In addition, because the NAP suggested several changes in the Vermont research report, interactions related to the revisions also occurred.

IR&DT Participants' Views Regarding Technical Assistance

At the conclusion of the IR&DT Study, IR&DT team members at both sites were asked to reflect on and react to the technical assistance they received.

The researcher on the California team indicated that for the most part the assistance was helpful. He noted that he would have liked to have had more help in analyzing the team's qualitative data and stated that once the team "had what we wanted to do, we were happy so we said 'no' to technical assistance." This latter comment was in reference to his October 1977 and January 1978 communiques in which he stated that the team did not need to meet with the Laboratory staff who were coming to San Diego for other purposes and would be available if the team wished to meet with them.

The California trainer/developer stated that the orientation session was the most helpful technical assistance. He suggested that a similar session should be held after the team had decided upon a question/problem so that the Laboratory staff could present information about research and training that was relevant to the question. He noted that the written syntheses of NAP critiques caused "neuroticism." He would have liked to have had the Laboratory staff be more specific in saying what might be done next.

Teacher C-1 felt that the interaction with the Far West Laboratory staff kept the California team "on those time lines." She indicated that sometimes the Laboratory staff did not seem to understand what the team was planning to do or the types of help they needed. Teacher C-2 indicated some input from Far

West Laboratory staff was discouraging because the team was advised not to make the study too complex and this made it impossible to get all the information the teachers wanted. She also indicated there were times when she felt the Laboratory staff was not listening or did not understand what the team wanted. Teacher C-3 thought the technical assistance was helpful but would have liked more assistance in analyzing the ethnographic data. For Teacher C-4 the most helpful technical assistance was the training in qualitative data collection the Laboratory gave the researcher and trainer/developer.

The director of inservice education for the school district in which the California team was located was very positive about the technical assistance. He was careful to say that the Laboratory staff did not come in and do the work for the team but rather brought advice, alternatives, and new ideological perspectives.

The Vermont researcher stated that the most helpful technical assistance occurred on-site when the Far West Laboratory staff "pulled apart" what the Vermont team was doing and used an inductive approach to show them what would happen if they went that way. He indicated that the technical assistance shaped what the team did but noted that the team resisted those suggestions that they "really didn't want to get involved with." He said the suggestion to go to other teachers for agreement on the team's question was very helpful.

The Vermont trainer/developer who worked with the team beginning in November 1977 supported the value of face-to-face technical assistance. Teacher V-1 also found the on-site contacts most useful. She asked that the advice and recommendations offered be more specific. Teacher V-2 found the on-site technical assistance related to data collection and analysis to be most helpful. Teacher V-3 felt that at first the team was embarrassed to ask for help. Ideally, she would want the persons offering the assistance to be in closer proximity to the team.

The acting dean of the College of Education and Social Services thought that the on-site assistance should have occurred more often and in smaller pieces; that as it was, the on-site sessions included too many topics and too many new ideas.

Relative to the NAP, all team members found their work to be positive and contributory. However, some team members reported that the distribution of the written critiques at the research design phase was confusing because the comments across panel members contained contradictory messages. It was also noted that it would have been helpful if the team members and the NAP could have had more extended dialogue about the designs and the critiques after a period of reflection by team members. In the case of the Vermont research design, which was severely criticized by the NAP, it was expected that the team would be inclined to abandon their work. Just the opposite occurred, as noted earlier, in that renewed energy and commitment to finish were the consequences. As two members of the team said at that time, "If Far West Laboratory won't let us finish, we'll do it on our own."

National Advisory Panel

The National Advisory Panel (NAP) to IR&DT has been mentioned frequently in the above discussion of technical assistance.

The NAP engaged in three broad categories of activity: (1) advice to Far West Laboratory staff regarding the implementation of IR&DT, (2) advice to the IR&DT teams regarding their research and training design, and (3) advice to the IR&DT teams regarding their research and training reports. This section discusses the members of the NAP and describes in more detail all their activities during IR&DT implementation.

Members of the National Advisory Panel. Prior to the implementation of IR&DT, Far West Laboratory staff and NIE decided that it would be desirable to involve recognized leaders in the professional specializations represented on IR&DT teams as advisers to the study. Consequently, four persons were invited to serve on the NAP. Each was selected based upon his or her contributions to the fields of educational research, development, and teaching. (Members of the NAP are listed in Appendix E.)

One NAP member's special interests were in the areas of teacher behavior and classroom processes. His own research focused on the complexities of classroom based teaching and learning and on the strategies teachers and students used to negotiate demands and behaviors in natural classroom settings. In addition to his research, he was actively involved in teaching undergraduate and graduate courses in teaching methodology and served as the editor for a major professional journal in education.

One member was a teacher who was well known for her innovative approaches to teaching in a K-2 open classroom. A former Peace Corps teacher, she had participated in numerous research and curriculum development projects.

The third member of the NAP was involved in implementing a statewide training/staff development program which was developed by a consortium of teachers, teacher organizations, the state education agency, and institutions of higher education. He was known for his work in developing one of the models of elementary teacher education which served as the forerunner for the competency-based teacher education movement.

The fourth member of the panel was known nationally for her work in studying effective teacher behaviors related to student learning and affective outcomes. Her current work included collaborative research with teachers.

As can be seen, the four NAP members represented the roles of the teacher, researcher, and trainer/developer on an IR&DT team. These perspectives were included on the NAP so their advice would represent the viewpoints of all participants rather than be skewed toward the perspectives of one at the expense of the others. In practice, this combination of persons provided insightful and expert counsel to all involved in the implementation of IR&DT. A major advantage received from such a group is the objectivity and fresh views that were brought to the r and d effort.

Advice to Far West Laboratory staff. Prior to the implementation of IR&DT, the NAP was convened to advise Far West Laboratory staff regarding the participant characteristics which might be most desirable, the places where persons who exhibited such characteristics might be found, the site characteristics which might be most advantageous, and evaluation procedures which would be helpful in describing the implementation process. As was typical for NAP meetings, the group met for two days at Far West Laboratory, having been informed of the agenda of the meeting and supplied with relevant materials in advance. The first meeting resulted in a firm set of components for the IR&DT Study (which is reported herein), a set of assertions about the types of persons and sites that might lead to effective implementation of the IR&DT strategy, and a sense of collegiality among NAP members and Laboratory staff.

Throughout the IR&DT Study, many IR&DT-related documents and "think" papers were circulated to the NAP with a solicitation of their advice. Careful attention was paid to such requests by NAP members and thoughtful replies were received by the Laboratory staff via telephone or in writing. Examples of documents submitted for NAP response include designs for various phases of the IR&DT Study, Far West Laboratory responses to NIE requests for information, three newsletters produced by the Laboratory regarding IR&DT, specific instrumentation and procedures for data collection related to the IR&DT Study, and interim reports regarding the IR&DT implementation at the California and Vermont sites.

Since the NAP members and Far West Laboratory staff attended many of the same professional meetings, several informal work sessions were held throughout the course of the IR&DT Study. These supplemented the written and telephone comunications mentioned above.

Subsequent to the completion of the implementation period, the NAP met with the Far West Laboratory staff to discuss the reporting of the IR&DT Study and to advise regarding how that reporting could be handled most efficiently and effectively.

Advice to IR&DT teams regarding research and training/designs. As noted earlier, the NAP was convened in December 1977 to review and critique the two IR&DT teams' research designs. In this case the NAP members were asked to carry out their reviews individually. The nature of this work was to (1) specify the criteria upon which the critique was based, (2) prepare a written critique of the designs, (3) confer with other members if this was seen as desirable once the individual critiques were completed, and (4) meet with representatives of each team to share their insights with them. The sharing of the critiques was done at the Laboratory with all NAP members present. At these sessions the Panel asked questions of the researcher and the teacher member of the respective team and offered suggestions for improving the designs. The critique for each team was held separately.

Team members also were provided with the NAP's written critiques and were instructed to return to their other team members with the express purpose of discussing the critiques and deciding upon how to respond to them. It was made clear that all recommendations and/or criticisms need not be sources for revision in the research designs but that some response, if only to explain why a suggestion was not being followed, was expected. The nature of the critiques was discussed earlier in this chapter.

In the case of the training designs, the same procedure regarding preparation of critiques was maintained. However, the NAP was not brought together. The critiques were either mailed to Far West Laboratory or communicated by telephone. Far West Laboratory staff then prepared summary statements which were sent to the teams and the same expectations regarding response were indicated.

Advice to IR&DT teams regarding final research and training reports. When the two IR&DT teams had completed their final reports of their research and training efforts, NAP members were sent copies and asked to review and critique them giving particular attention to suggestions for improving the quality of the description of the research and training procedures and the presentation of findings. This review also was conducted without convening the panel. Far West Laboratory again prepared syntheses of the reviews and forwarded them to the appropriate teams. As in the case of the research and training designs the teams were instructed to attend to the issues raised in the critiques and specify how they planned to act upon them.

Contractual Arrangements

Throughout the technical assistance discussion, contacts of an administrative nature have been listed relative to Far West Laboratory's subcontract agreements with the school district and the university. One reason for the frequency of these contacts was the mismatch between the school and university calendars and the Laboratory's funding cycles. In particular, negotiations regarding staff time were complicated by the fact that all three subcontract periods began and ended in the middle of both the school district and university semester schedules. In such institutions salaries are typically computed and staff time is assigned on a semester basis. The Laboratory staff spent numerous hours in order to accommodate the mis-match between these long-established arrangements and the time restrictions contained in the prime contract with the National Institute of Education (NIE). This, in turn, increased the amount of "administrative" time allocated to technical assistance beyond what might be expected normally.

Further, not only did the subcontracts begin and end at mid-semester points, no single subcontract covered more than a six-month period. Again, this was because NIE was funding the Far West Laboratory in small increments at the time. Nonetheless, an inordinate amount of technical assistance time and effort was required to prepare and negotiate the subcontract agreements.

Summary

This chapter has presented findings related to the implementation of IR&DT at two sites. The nature of the interaction within each team has been discussed, the types of technical assistance that were provided to each team have been described, the role of the NAP was outlined, and timing problems relative to the subcontracts between the Far West Laboratory and the sites have been discussed.

In general, the findings indicate that the teams interacted differently although the IR&DT requirements of team member parity and broad participation in team deliberations were met by both groups.

The California team demonstrated greater systematic persistence in carrying out their research and engaged more frequently in the r and d related behaviors speculated as being contributory to high quality educational r and d than their Vermont counterparts. The California team requested less technical assistance, had fewer technical assistance contacts/interactions with Far West Laboratory than the Vermont team. NAP critiques differed for the teams with the Vermont team being asked to undertake more thorough revisions of their research and training designs and their final research and training reports than the California team.

Thus it appears that the two teams that implemented the IR&DT strategy operated very differently. The possible relations between these differences and the quality of their research and training outcomes (see Chapter Five for a discussion of r and d outcomes) and the site and participant outcomes (see Chapter Six) are discussed in Chapter Seven of this report.

CHAPTER FIVE

JUDGMENT OF IR&DT TEAMS' R AND D OUTCOMES

A basic assumption which has persisted from the initial planning period through the implementation of IR&DT is that research and development conducted in this mode will provide useful knowledge and contribute to theory development. This assumption was presented and discussed in Chapter One, and purposes and procedures for inquiring into its manisfestation as a second major Study goal were presented in Chapter Two. The purpose of this chapter is to present findings regarding the degree to which the California and Vermont IR&DT teams' r and d outcomes fulfilled this expectation. A review of the two constructs embedded in this assumption, rigor and usefulness, is presented first. A review of the procedures for assessing each teams' r and d outcomes in relation to these constructs is presented next, followed by a brief description of each teams' products. The remainder of the chapter is divided into two major sections. The first presents findings of six juries organized to develop criteria and judge each teams' products, and the second presents judgments made by independent experts and site counterparts who responded to items on a questionnaire.

Purposes and Procedures

Two constructs have emerged during the IR&DT study which provide standards for attending directly to the assumptions under discussion here. These are "rigor" and "usefulness." Both are considered to be necessary if r and d outcomes are to be considered useful for knowledge generation, theory development, and improvement of teaching and learning as they occur at the classroom level.

Rigor is meant to convey strictly precise, exact, accurate adherence to standards of excellence and attention to scholarly inquiry in terms of r and d methods and procedures. Thus, although persons involved in IR&DT may be other than those usually engaged in conducting r and d, it has been asserted that the quality of these efforts will be equal to commonly accepted standards of practice. It should be noted that this definition for rigor is a coined one in that dictionary definitions have not yet included notions of scientific rigor but speak instead of harshness, sternness, and severity.

Usefulness is defined according to the second American College Dictionary definition, meaning ". . .of practical use, as for doing work; producing material results; supplying common needs. . ." (1966, p. 1338). Here the term is applied to mean useful to teachers as ways for inquiring into and altering their classroom behavior, useful to trainer/developers in the planning and implementing of teacher education programs, and useful to researchers for contributing to knowledge, theory development, and development or refinement of new or current scientific modes of inquiry.

As discussed in Chapter Two, three judging procedures were used: a jury system wherein six three-person juries comprised of experts from various professional positions in education developed criteria and judged IR&DT teams' r and d outcomes independently, comparing each against the norm for educational r and d products; solicitation of responses to items on a questionnaire from seven additional experts, with experts comprised of teachers, researchers, and teacher educators or staff developers and representing a national r and d perspective; and solicitation of the opinions of six counterparts (two each for teachers, researchers, teacher educators or staff developers) from each site to questionnaire items in relation to the r and d products at that IR&DT site only. A brief description follows of each team's r and d outcomes. Jury deliberations are presented and discussed in the next section of this chapter. Following this, expert and site counterpart evaluations are combined and presented in a separate action.

IR&DT Teams' R and D Outcomes

During implementation, each IR&DT team was charged with (1) identifying a critical question/problem and conducting research related to that question/problem, and (2) developing and implementing a training program for other teachers which included as training foci both findings and useful procedural strategies gleaned from the conduct of their research. As part of these efforts, each team was required to produce written documents which reported their findings and described their research and training efforts. As discussed in Chapter Two, these reports served as the r and d products which were submitted to jurors, experts, and site counterparts for purposes of evaluation. A brief overview of the products from each site follows. Complete abstracts for each team appear as Appendix A (California) and Appendix B (Vermont).

California IR&DT Team's R and D Outcomes

As noted in Chapter Three, the California IR&DT was located in the San Diego Unified School District serving in excess of 100,000 students. The team was comprised of a researcher, trainer/developer, and four teachers who taught in grades kindergarten through a grade 3-4 combination. All were employed by the school district.

The question upon which the California IR&DT team focused its research was:

> What are the strategies and techniques which classroom teachers use to cope with distractions to classroom instruction and how effective are the techniques?

As the school district was devoting attention to the importance of students' "time-on-task" (i.e., the concept of the amount of time students are engaged in meaningful learning activities), this question was considered particularly appropriate and timely by teachers and others in the district.

The purpose of the research study, then, was to examine the techniques classroom teachers use to cope with distractions to classroom instruction and to determine how effective these techniques were with respect to: (1) minimizing instructional time lost due to distractions, (2) dealing with distractions at a level which has a minimal disruptive effect upon the flow of instruction, and (3) eliminating distractions. For purpose of the research, classroom distractions were defined as those events which take teachers and/or their students off the intended instructional tasks. Coping techniques were defined as mechanisms, verbal or nonverbal, used by the teachers to eliminate a distraction.

Concurrent with conducting their inquiry, the team designed a training program for other teachers. This featured several components from the research methodology, particularly the data collection techniques developed by the team to inquire into their question. In addition, the training design included information about classroom distractions and coping techniques obtained through the team's research study and engaged participants in inquiring systematically into their own classrooms for evidence of these.

Research was conducted in the winter and spring of 1978 in eight classrooms (those of the four teachers on the IR&DT and four additional teachers matched by grade level). Data were analyzed in the spring and summer, and included quantitative codings of occurrences of distractions and coping strategies and narrative descriptions of teacher-student interactions, and other relevant context information. Two observers collected the data simultaneously, one doing the coding and the other the narrative description. Data interpretation and report writing took place over the summer. The training design was completed and reviewed by the NAP in late spring and the training was conducted in the fall of 1976.

Four major reports summarize the California IR&DT team's r and d outcomes: Evolution of the Study, which describes the process the team went through in conducting its r and d; Formal Research Report, which summarized the conduct of the research and presents findings and interpretation across the eight classrooms; Four Teacher Case Studies, each of which describes the contexts of two paired classrooms based on grade level taught, as per the matched sample noted above, and presents findings for the two teachers as well as commentary by the teachers regarding the insights about their teaching that resulted from participation in the research; and Formal Training Report, which describes the training program designed and conducted for other teachers and presents results of the training.

Vermont IR&DT Team's R and D Outcomes

The Vermont team was located in Burlington, Vermont. The researcher and trainer/developer on the team were on the faculty of the University of Vermont, College of Education and Social Services. The three teachers on the team were from a single-school school district located some 20 miles outside Burlington.

The question upon which the Vermont IR&DT team focused its research was:

> Are there relationships between the mood of the teachers and the teacher's classroom supportive instructional behavior? If so, what is the nature of these relationships?

Mood was defined as a state, not a trait. The instructional behaviors selected by the team to be studied for their possible connection with mood were called supportive instructional behaviors (SIBs). A set of such behaviors was selected from existing research on teaching literature. The SIBs included acceptance, attending, conviviality, cooperation, engagement, monitoring, pacing, promoting self-sufficiency, and optimism.

Concurrent with conducting their research, the team designed a training program for other teachers. This featured topics outside their research as well as data collection strategies developed by the team to inquire into their question.

Research was conducted late in Spring 1978 in nine classrooms (none of the teachers was on the IR&DT team). The data included narrative description of what occurred in each classroom during the reading lesson and the teacher's most difficult time of the day, teacher ratings of a mood adjective checklist (obtained prior to each observation), and observer-teacher interviews. Data were analyzed and interpreted late in the summer. Reports were written in early fall. The training design was completed and submitted for review by the National Advisory Panel in early summer and training was conducted in the fall. Three major reports summarize the Vermont IR&DT team's r and d outcomes: a Formal Research Report, which summarizes conduct of the research and presents findings, interpretations, and conclusions across the nine classrooms; Nine Case Studies for the teachers who served as research subjects, each of which describes the context of teachers' classrooms and discusses findings for each; and a Formal Training Report which describes the training program designed and conducted for other teachers and presents results of training.

As previously mentioned, the r and d products for each IR&DT team served as the focus for judgment. Presented next is a discussion of the jury system used for evaluating them.

Judgment of the IR&DT Teams' R and D Outcomes for Rigor and Usefulness by Six Juries

Six juries were organized to judge the teams' r and d outcomes for rigor and usefulness. Procedures for their operation were presented in Chapter Two and are reviewed here as an introduction to the discussion of their deliberations.

Each jury was comprised of three persons. Juries were organized to reflect particular biases from among the constituent users of educational r and d, each of whom was considered expert in his or her respective educational role: teachers, researchers, teacher educators, and staff developers. Juries included (1) a jury of three researchers that judged the rigor with which research had been conducted as reflected by the research reports; (2) a jury of three researchers that examined the degree to which research as reported contributed to new knowledge and/or theory development; (3) a jury of two teacher eduators and a staff developer that judged the rigor of the training as reported; and (4) three juries (a teacher jury, a staff developer jury, and a teacher educator jury) that judged the r and d outcomes from each site--both research and training as reported--for its usefulness to their constituents. Jury members' names and professional affiliations appear in Appendix D.

Each jury met separately for one day. All meetings were scheduled within a two-week period in February 1979. Jury procedures were presented in Chapter Two and are repeated at the beginning of the discussion of each jury's deliberations below. Essentially, jurors were asked (1) to develop criteria for either rigor or usefulness, whichever was the jury's focus; (2) to use these to make independent judgment of each team's r and/or d in comparison with what the juror knew to be typical; and (3) to bring criteria and judgments to the meeting. Meetings were audio-recorded, transcribed, and served as the basis for the reports of jury deliberations which follow. In addition, each juror has reviewed the deliberations for his or her jury for purposes of accuracy.

The discussions which follow present the deliberations of each jury in turn. In addition, summary information is combined with findings from the evaluation made by experts and site counterparts, and reported in the summary of this chapter.

Rigor of the Research

The first question regarding judgment of the research and development products of the two IR&DT teams regards the rigor with which the research was conducted by each team. For this judgment, rigor was defined initially by the FWL principal investigators to convey notions of scientific rigor: strictly precise, exact, accurate adherence to standards of excellence. As discussed earlier, one of the assumptions undergirding the IR&DT strategy was that research and development conducted in this way would be as rigorous as that conducted in more conventional ways.

To develop more precise criteria for rigor and to apply these to each of the two IR&DT teams' research for purposes of judgment, a jury of three researchers was nominated. For this evaluation, researchers were perceived to represent three settings in which educational research usually is conducted: a university, a local education agency, and a regional educational laboratory.

In order to make their judgments, jury members were directed to read the research documents for each team. Each jury member was requested to develop criteria for rigor of the research based on an understanding of usual standards utilized in conducting educational research. Then, they were asked to apply these criteria to the research of each team as represented by the reports, making an independent evaluation of each in comparison with what they understood to be typical of other educational research reports.

Criteria and evaluations were brought to the meeting of the jury held in San Francisco on Friday, February 23, 1979. These served as the basis on which judgment was made. Final criteria used as well as the judging of each team's research were accomplished by discussion and consensus decision making. A description of jury members, their criteria, and their judgments follows.

Members of the Jury. As indicated, three researchers comprised the jury, two of whom were female and one a male. Additionally, one of the jurors was from a minority background.

The first represents expertise as Director of Research and Evaluation for the Tucson, Arizona schools, for the past eight years. Professional preparation included a focus on child development, education of the mentally retarded, and a doctorate in special education and psychology. In addition, this juror taught for twelve years in grades 1 and 2, and with behaviorally disturbed students, grades 1-12, and has published extensively.

The second juror currently serves as a Research Associate for Learning Research and Development Center (University of Pittsburgh) and is a Research Associate Professor in the School of Education at that institution. Experience includes classroom teaching of young children, professional preparation in child development and educational research, and licensure as a psychologist in the State of Pennsylvania. In addition, this juror is responsible for multiple studies of research on teaching, the findings of which are widely published in journals and books.

Perspectives as a professor of research as well as a practicing researcher at the University of Missouri are represented by the third juror. Primarily prepared in educational psychology, this juror is recognized internationally for landmark work in research on teaching. Such expertise is represented in numerous journal articles and eight books of which he is co-author, focusing on how the beliefs and norms held by teachers impact upon classroom behavior and perceptions of students of their learning.

Criteria. Charged with judging the research reported by the two IR&DT teams, the jury generated eight major categories of criteria. These contain 30 judgment points, which are presented below.

1. Internal validity of the research question: How was the research question determined?

   a. Review of the literature: Was a review of relevant literature conducted in relation to establishing that the research question is of concern to teachers?

   b. Assessment of needs: Was an assessment of teachers' needs conducted to determine the importance of the problem?

   c. Relevance to teachers: Is the research topic perceived by teachers to be relevant?

   d. Grounding of the problem: Is the problem selected for inquiry classroom-based? Will it serve to inform the solution of classroom problems?

   e. Adequacy of sampling: Were sufficient numbers of teachers surveyed to establish the need for the research study?

2. External validity of the research question: How is the research question related to other research in the area of investigation?

   a. Significance of the problem: In relation to previous research conducted, is the problem perceived to be significant?

   b. Review of the literature: Has a thorough review of the literature of related research been conducted? Was care taken to establish appropriate linkages to prior work and to identify appropriate variables to study?

3. Clarity of research design: Are the tasks of inquiry explicitly described and appropriate given the research question?

   a. Clarity of conceptualization: Is there clear documentation of linkages established between the research topic, the problem definition, identification of phenomena to be studied, clarification of questions to be asked, identification of sources of data, and description of information to be obtained?

   b. Definition of terms: Are terms defined clearly enough such that they are operable for answering the research question?

   c. Objectives: Are the objectives of the study consistent with the research question and phenomena under investigation?

4. Data collection procedures: Were data collection procedures constructed that are appropriate to the task?

   a. Relationship to objectives: To what degree were data collection procedures relevant to and consistent with the research objectives?

   b. Scope or width: Are the data sufficiently expansive to allow for completeness of explanation of phenomena observed?

   c. Sampling: Were sampling procedures used appropriately such that sufficient evidence of fidelity is established between what was observed and what kinds of data were collected?

5. Adequacy of data collection: Were procedures for developing and using data collection clearly and adequately documented and described?

   a. Reliability of data collection instruments: Was sufficient reliability of data collection instruments established and clearly reported?

   b. Reliability of data collection process: Was sufficient reliability of the data collection process established and clearly documented and reported?

   c. Replicability of data collection: Are data collection instruments and the process clearly enough described so that they can be used by other researchers?

   d. Observer training: Were observers trained appropriately and to a sufficient level of reliability? Were these procedures clearly described?

   e. Validity and appropriateness: Were the data collection instruments and process valid and appropriate to the question under investigation and to the sources of data tapped?

6. Data analysis: Were data analysis procedures documented and reported clearly enough to enable judgment of their effectiveness in answering the research question?

   a. Data reduction procedures: Were the procedures used to reduce data appropriate to understanding how they provide information about the question under inquiry?

   b. Awareness of options: Is the data reduction sufficiently illustrative that the researchers were aware of data reduction options and selected from among these appropriately?

   c. Potential for secondary analyses: Is there sufficient potential for others to analyze the data given the information provided in the report?

   d. Data analysis: Was analysis of the data appropriate to the research question(s) asked? Did analysis serve to answer them?

   e. Presentation of data: Are all data presented necessary to understanding what was observed in relation to answering the research question(s)?

7. Interpretation of findings: Is there evidence that findings are interpreted appropriately and completely?

    a. Process of interpreting findings: Did the involvement of teachers in the process of interpretation add anything significant or different to what was produced?

    b. Evidence for interpretation: To what degree is there fidelity between interpretation, data analysis, and the research question, i.e., is there a sound base on which interpretation rests?

8. Conclusions: Are conclusions rational given the research questions and supporting data and procedures?

    a. Overreach/underreach: Do conclusions about answering the research question(s) go beyond boundaries of reasonableness given the data presented and their reduction, analysis, and interpretation? Is there evidence in the documentation that conclusions do not make full use of information potentially available (e.g., alternative data interpretation and analysis)?

    b. Statement of outcome(s): Do the conclusions make a clear and reasonable statement of what was learned about the research question(s)?

    c. Sensitivity to limitations: Is there exhibited in the documentation a sensitivity to the potential limitations of the data for drawing conclusions?

    d. Recommendations: Are reasonable recommendations made to the field concerning further study of the research question(s) and/or specific aspects of either it or the procedures used?

    e. Readiness of findings for implementation: Are findings significant enough and clearly enough documented and presented such that they are immediately ready for dissemination?

Application of criteria. Criteria were applied independently to each of the two IR&DT teams' research reports. In arriving at their judgments, the jury compared each team's efforts with what they understood to be typical educational research reported. In order to gauge their judgments, the jury further determined to use a five place judgment scale:

- Much more rigorous than typical educational research
- Somewhat more rigorous than typical educational research
- As rigorous as typical educational research

- Somewhat less rigorous than typical educational research
- Much less rigorous than typical educational research.

Their evaluation of each team's research in relation to the 30 judgment points of the criteria for rigor of the research follows. It should be noted that the jury did not assign differential weighting to these categories and/or judgment points. Thus, one criterion or judgment point should not be interpreted to be more important than others.

Judgment of the California IR&DT team's research. The jury reached consensus for each of the criteria for rigor of the research conducted by the California IR&DT team. On only two criteria was there a degree of difference, and these are reported below along with summary statements. Particularly relevant or clarifying statements of individual jury members are also included.

> Criterion 1--Internal validity of the research question: How was the research question determined?
>
> Criterion 1.a--Review of the literature: Was a review of relevant literature conducted in relation to establishing that the research question is of concern to teachers?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

In comparison with typical educational research, the jury found the California IR&DT team to have conducted a literature review in relation to establishing relevance for their topic to teachers that was more rigorous than usual. The jury was impressed that the review was up-to-date in terms of what the literature has to contribute about classroom management and distractions, and how these affect the classroom process. However, the jury also pointed out that to be more comprehensive the literature review might have included the work done in behavior modification. Particularly in terms of relevance for classroom teachers, much treatment research has been done dealing with behavior of disturbed children and how teachers cope. A review of this literature might have provided further insights.

> Criterian 1.b--Assessment of needs: Was an assessment of teachers' needs conducted to determine the importance of the problem?
>
> - Overall judgment: As rigorous as typical educational research.

The jury judged the assessment of needs process to be as rigorous as that conducted in typical educational research. In so doing, jury members distinguished between their judgments for the importance of the problem and the process used by the California IR&DT team for assessing needs of teachers in relation to the problem. As one juror said, "I think they were right in that they hit upon something that is of great general interest. But the process they used for making that decision was pretty insulated." To have somehow surveyed teachers' needs in relation to the problem would have been more efficacious in their opinion.

> Criterion 1.c--Relevance to teachers: Is the research topic perceived by teachers to be relevant?
>
> - Overall judgment: Much more rigorous than typical educational research.

A commendation was extended by the jury to the California IR&DT team for delineating a topic that is so relevant to teachers. Particularly when increasing instructional time is fast becoming a focus nationally, coping with classroom distractions seemed to the jury to be highly important to increasing time.

> Criterion 1.d--Grounding of the problem: Is the problem selected for inquiry classroom-based? Will it serve to inform the solution of classroom problems?
>
> - Overall judgment: Much more rigorous than typical educational research.

The care the California team took to insure that the research question was classroom-based was judged to be exemplary. In particular, jury members cited the time spent by all members of the team observing in other classrooms to identify distractions and coping strategies as being a process they could recommend to others conducting educational research.

> Criterion 1.e--Adequacy of sampling: Were sufficient numbers of teachers surveyed to establish the need for the research study?
>
> - Overall judgment: Much more rigorous than typical educational research.

In focusing on this criterion, the jury also commended the California IR&DT team for presenting the process of their r and d in a separate volume, Evolution of the Study. Particularly in relationship to establishing whether or not adequate sampling procedures had been used, this overview proved to be valuable. In addition, the Formal Research Report complemented the overview by presenting additional information.

In particular, the jury cited the procedures the California IR&DT team used to insure that the problem they desired to inquire into had internal validity beyond the concerns of teachers on the team. Not only were other teachers' opinions surveyed in innovative ways (such as the trainer/developer holding meetings with teachers in other schools in the district), but members of the entire team spent time observing in classrooms of other teachers to establish that their research question was, indeed, an important one. The jury noted that this activity evolved naturally into a powerful procedure for observing and categorizing the number and kinds of distractions that occur in classrooms and the variety of ways in which teachers cope with these.

> Criterion 2--External validity of the research question: How is the research question related to other research in the area of investigation?
>
> Criterion 2.a--Significance of the problem: In relation to previous research conducted, is the problem perceived to be significant?
>
> - Overall judgment: Much more rigorous than typical educational research.

"Not only is the problem identified clearly relevant to teachers on the team," stated one juror, "it is highly relevant both to what we know about teaching and to the literature about teaching." While the jury thought the California IR&DT team might have done a more complete job of processing all of the information available to justify their points, they also judged it to be "very well documented as [to the problem] being a critical determinant of learning."

> Criterion 2.b--Review of the literature: Has a thorough review of the literature of related research been conducted? Was care taken to establish appropriate linkages to prior work and to identify appropriate variables to study?

- Overall judgment: As rigorous as typical educational literature.

As indicated earlier, the jury suggested that the California IR&DT team missed mentioning the literature of behavior modification. For this reason, but because they also found the literature reviewed to be otherwise complete and germane to the research question, the jury found the literature review of the California report to be as rigorous for establishing external validity as that found in typical educational research.

> Criterion 3--Clarity of research design: Are the tasks of inquiry explicitly described and appropriate given the research question?

> Criterion 3.a--Clarity of conceptualization: Is there clear documentation of linkages established between the research topic, the problem definition, identification of phenomena to be studied, clarification of questions to be asked, identification of sources of data, and description of information to be obtained?

- Overall judgment: Somewhat more rigorous than typical educational research.

The jury liked the manner in which disruptions and their meaning in context had been developed by the California IR&DT team, as well as these same aspects for coping strategies utilized by teachers. Citing Figure 6, "Distractions to Classroom Instruction" (Formal Research Report), as an example, one juror stated, "In comparison to the average conceptualization of phenomena that we see in most research reports, this is better. As a conceptual map of distractions, it compares favorably to the normal conceptual grid of research." The jury pointed out, however, that while the original definition of the problem started out with distractions that are both teacher aand student initiated as well as the effect on both, the problem was narrowed to look at only those distractions which interrupted the teacher and how teachers coped with these. While the jury recognized that this shift in focus was in response to time constraint concerns registered by the National Advisory Penel in their review of the research design, it suggested that a clearer statement describing this delineation process was needed.

> Criterion 3.b--Definition of terms: Are terms defined clearly enough such that they are operable for answering the research question?
>
> - Overall judgment: Between "Somewhat more rigorous" and "Much more rigorous" than typical educational research.

For this criterion, the jury members registered their judgments at three places: "somewhat more rigorous," "much more rigorous," and "halfway between 'somewhat' and 'much more' rigorous" than typical educational research. One juror said, "The normative study is only dealing with one or two variables. Therefore, you may get two, three, or four examples of those variables in process terms. Here they are dealing with thirty-nine terms and it is much more complicated." Another juror called it a "rich taxonomy of possibilities and definitions." In particular, the jury liked the process by which the California IR&DT team generated their categories by looking for distractions and coping techniques in classrooms, then collapsing categories after pilot testing their definitions, again through classroom observation.

> Criterion 3.c--Objectives: Are the objectives of the study consistent with the research question and phenomena under investigation?
>
> - Overall judgment: Between "As rigorous" and "Somewhat more rigorous" than typical educational research.

Also for this criterion, jury members split their vote, with two persons recording a judgment of "as rigorous" and one person recording a judgment of "somewhat more rigorous than typical educational research." While jurors found objectives stated "more clearly than the average," they suggested that the California IR&DT team might have been more explicit in stating the possible relationships between distractions and how teachers cope with these. For instance, one juror said, "I see a statement of distraction and [a statement of] coping, but how do you further break it down so that you can analyze your data [in terms of] this kind of circumstance, these sorts of coping behaviors, for this teacher?"

> Criterion 4--Data collection procedures: Were data collection procedures constructed that are appropriate to the task?
>
> Criterion 4.a--Relationship to objectives: To what degree were data collection procedures relevant to and consistent with the research objectives?
>
> - Overall judgment: Much more rigorous than typical educational research.

The care taken by the California IR&DT team to build their data collection procedures upon their objectives was judged to be exemplary by the jury. Jurors cited such things as the "contextualization of disruption" and the time taken to pilot test their data collection strategies and revise categories or definitions when necessary. In addition, one juror stated, "They seem to be aware of alternatives," and wondered if, "this could be the ability of the researcher who as a public school person [might be] more aware of what the possibilities were in the real [classroom] environment."

> Criterion 4.b--Scope or width: Are the data sufficiently expansive to allow for completeness of explanation of phenomena observed?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

Both for scope and width, the jury judged the California IR&DT team's data to be somewhat more expansive than that found in typical educational research. In terms of scope of the data, the jury would like to have seen proactive as well as reactive teacher coping behaviors included. As one juror said, "[By omitting] the proactive phase of looking at coping with disruption, the power [of asking whether] some teachers are better able to prevent disruptions is diminished. This might have helped to explain some of the individual difference measures they got."

In terms of the width of the data, the jury found exemplary and unusual the collection of both quantitative and qualitative data. This also added significantly to the knowledge base that the California IR&DT team could potentially construct for answering some of their questions. and the jury acknowledged this resulting possibility.

> Criterion 4.c--Sampling: Were sampling procedures used appropriately such that sufficient evidence of fidelity is established between what was observed and what kinds of data were collected?
>
> - Overall judgment: As rigorous as typical educational research.

Although the jury liked the sampling procedures used by the California IR&DT team, citing such examples as data collection instrument pilot testing and resultant adjustment, and the pairing of teachers on the IR&DT team with similar teachers for purposes of establishing the research sample, they still judged sampling to be only as rigorous as typical educational research. Their rationale rested on the team's decision to eliminate individual students as the possible source of most distractions and how teachers might cope with them individually. While the jury mumbers recognized that this variable was eliminated upon suggestion by the National Advisory Panel in direct consideration of time limitations, they nevertheless suggested that one of the potentially powerful sources of information for answering the research question was resultantly eliminated. One juror said, "They included grade level differences, teacher differences, and classroom differences. They should have included students most responsible for disruptive behavior so these differences could have been looked at in comparison with others."

Criterion 5--Adequacy of data collection: Were procedures for developing and using data collection clearly and adequately documented and described?

Criterion 5.a--Reliability of data collection instruments: Was sufficient reliability of data collection instruments established and clearly reported?

- Overall judgment: As rigorous as typical educational research.

In judging the reliability of data collection instruments for the California IR&DT team to be as rigorous as those usually found in educational research, jury members suggested that perhaps in looking simultaneously at so many variables, reliability reported was as high as might be expected. Even so, and acknowledging that "the rigor with which reliability data were collected is in itself a statement," the jury found this criterion for the California study to be only average.

Criterion 5.b--Reliability of data collection process: Was sufficient reliability of the data collection process established and clearly documented and reported?

- Overall judgment: Somewhat more rigorous than typical educational research.

In their opinion, jury members found that for this criterion the California report reflected somewhat more rigor than is typically found in educational research. As evidence, the jury pointed to the obvious ability of the data collectors to operationalize the definitions as reflected in their reliability ratings. Given that there were so many variables to handle simultaneously, the jury found this to be an admirable accomplishment.

Criterion 5.c--Replicability of data collection: Are data collection instruments and the process clearly enough described so that they can be used by other researchers?

- Overall judgment: Between "As rigorous" and "Somewhat more rigorous" than typical educational research.

While the jury had no difficulty understanding that data collectors for the California IR&DT team were able to be trained to use the data collection instruments, they found lacking the description of how to collect data using the instruments. Thus, replicability could be a problem. As one juror said, "If I took this instrument into a classroom, I'm not sure I could use it without further probing into how to do it." Nevertheless, the jury found the replicability of data collection for California to be above average in comparison with other educational research.

> Criterion 5.d--Observer training: Were observers trained appropriately and to a sufficient level of reliability? Were these procedures clearly described?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

As with Criterion 5.b above, the jury judged the California IR&DT team's observer training to be somewhat more rigorous than that typically found in educational research.

> Criterion 5.e--Validity and appropriateness: Were the data collection instruments and process valid and appropriate to the question under investigation and to the sources of data tapped?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

In summary for these data collection criteria, the jury judged validity and appropriateness of data collection instruments and processes utilized by the California IR&DT team to be somewhat more rigorous than that found in educational research.

> Criterion 6--Data analysis: Were data analysis procedures documented and reported clearly enough to enable judgment of their effectiveness in answering the research question?

For the next three criteria, the jury issued a blanket judgment, pointing out that data reduction procedures clearly illustrated an awareness of options, and that data were described such that they could be successfully submitted to secondary analysis.

Criterion 6.a--Data reduction procedures: Were the procedures used to reduce data appropriate to understanding how they provide information about the question under inquiry?

Criterion 6.b--Awareness of options: Is the data reduction sufficiently illustrative that the researchers were aware of data reduction options and selected from among these appropriately?

Criterion 6.c--Potential for secondary analysis: Is there sufficient potential for others to analyze the data given the information provided in the report?

- Overall judgment: Somewhat more rigorous than typical educational research.

One juror said, "They could have gone a little further on all the categories, but in general they did more than the average research project." The jury recognized that time constraints were involved, and that these might have contributed to delimiting other possible data reduction.

Criterion 6.d--Data analysis: Was analysis of the data appropriate to the research question(s) asked? Did analysis serve to answer them?

- Overall judgment: As rigorous as typical educational research.

In judging the California IR&DT team's approach to analysis of their data, the jury made several observations. First, one juror found that, although there was promise made early in the research design and the report that quantitative data and qualitative data complemented each other, when they got to analysis, integration was lacking in the two sets. For example, the teacher case studies, when focusing on the narrative descriptions, seldom tied them back to the quantitative information. Another example was the information presented later in the document to update Table 1, which displays the quantitative base. Said a juror, "How the qualitative data were used to support the quantitative data on that table never came through."

Another commented on the richness of the data, stating that "sometimes it's a tough thing, but when the data are as rich [as they are in this study], this handicaps the analysis."

A third concern centered on a question raised by one of the members of the jury. "If teachers vary widely from day to day, maybe it's misleading to use an average figure to represent their behavior," commented this juror. "What we ought to be saying instead is, 'Some days are considerably better than others, not only in terms of total disruptions but in particular categories.'" A suggestion was made that a better estimate could be made about whether data were flawed if some sort of standard deviation or median-by-teacher had been used.

> Criterion 6.e--Presentation of data: Are all data presented necessary to understanding what was observed in relation to answering the research question(s)?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

The jury complimented the California IR&DT team for the manner in which they presented data, citing it as a marked improvement over the average presentation in the research literature. Commented one juror, "On that level, particularly in the last few years, the norm is reasonably high [in research literature]. And they did a pretty good job in comparison with the norm." Another cited the inclusiveness of the data, saying, "I like the variations of the graphing and histograms. I think it's more easily readable by a wider range of audience than just [by] presenting tabular data."

> Criterion 7--Interpretation of findings: Is there evidence that findings are interpreted appropriately and completely?
>
> Criterion 7.a--Process of interpreting findings: Did the involvement of teachers in the process of interpretation add anything significant or different to what was produced?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

"The participation of the teachers in this study--especially in their planning and in their final case studies--really supports that teachers are viable members of research," stated one juror. All agreed that the involvement of teachers in the data interpretation process brought considerable credibility to the study than normally is available. The jury raised the question, however, of how much more information might have resulted if the Tier 2 teachers had been more involved in interpreting the data for their case studies. In some case studies, this was not the case. Still, it was the jury's opinion that, overall, teacher involvement in the interpretation of data improved the possibilities of what they might find. As one juror put it, "My response to this document as a whole is that it seems, in a very valid way, to represent the desirability and the payoff of using teachers in research. There's really a teacher effect here."

> Criterion 7.b--Evidence for interpretation: To what degree is there fidelity between interpretation, data analysis, and the research question, i.e., is there a sound base on which interpretation rests?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

In the opinion of the jury, there was reflected clearly high fidelity between interpretation, data analysis, and the research question in the reporting by the California IR&DT team. "They were rather inclusive about what they were considering for their interpretation," stated one juror. Another commented that "they were pretty solid points."

> Criterion 8--Conclusions: Are conclusions rational given the research questions and supporting data and procedures?
>
> Criterion 8.a--Overreach/underreach: Do conclusions about answering the research question(s) go beyond boundaries of reasonableness given the data presented and their reduction, analysis, and interpretation? Is there evidence in the documentation that conclusions do not make full use of information potentially available (e.g., alternative data interpretation and analysis)?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

The jury found no overreach problems in conclusions made by the California IR&DT team, but they wondered if the interpretations were not too conservative even though very appropriately accomplished. On this point, one juror said, "An important caveat was the fact that three or four students seemed to be responsible for much of the disruption." In discussing this, jurors commented that frequently a conclusion drawn is that low achieving students are responsible for such disruptive behavior. But, as one juror clarified, "McDermott's recent study in reading groups in first grade classrooms illustrates that it was the low achiever who was being interrupted by intrusions and disturbances of high achievers coming up to see the teacher. Therefore, the low achievers were having less time to practice reading." In light of this, the jury agreed that further conjecture on the part of the California team would have been helpful, particularly in terms of who those students might be and how this varied from classroom setting to classroom setting. Having registered this concern, however, the jury reconfirmed that "it's a minor point in terms of the scope of everything that was done. In general, it was excellent."

> Criterion 8.b--Statement of outcome(s): Do the conclusions make a clear and reasonable statement of what was learned about the research question(s)?
>
> - Overall judgment: Much more rigorous than typical educational research.

A thorough job of tying conclusions to interpretations and data and relating these to research questions by the California IR&DT team was commended by the jury. Particularly in what they found about distractions from what they assumed, "They learned a great deal. The distractions turned out to be quite different as they kept data, looked at their data, and kept sifting through it," stated one juror. Another predicted, "I think they probably learned quite a bit, perhaps more than they said. They'll be generalizing after this experience and be more aware of what's going on in the classroom."

> Criterion 8.c--Sensitivity to limitations: Is there exhibited in the documentation a sensitivity to the potential limitations of the data for drawing conclusions?
>
> - Overall judgment: As rigorous as typical educational research.

In general, the jury found the California IR&DT team to be a bit cautious in using their data for drawing conclusions. One juror said, "The report [Formal Research Report] had more generalized statements, but their cautiousness came through in what the teachers said in their case studies." Still, in the words of another juror, the jury "was impressed with the sensitivity to the limitations."

> Criterion 8.d--Recommendations: Are reasonable recommendations made to the field concerning further study of the research question(s) and/or specific aspects of either it or the procedures used?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

Exemplary for this criterion's judgment was what the California IR&DT team labeled "an emerging model." One juror said, "If you treat that as a potential for future use of the data, it is invaluable." In addition, another juror said, "I'm not sure they suggested where future research should go as much as they suggested changes that administrators and others should consider. In this respect, it was excellent."

> Criterion 8.e--Readiness of findings for implementation: Are findings significant enough and clearly enough documented and presented such that they are immediately ready for dissemination?
>
> - Overall judgment:
>
>   --Conceptual level: Much more rigorous than typical educational research.
>
>   --Empirical linkages: Between "As rigorous as" and "Somewhat less rigorous than" typical educational research.

For this criterion, the jury made two judgments for the California IR&DT team's study: one for what they called the "conceptual level" of distractions and coping strategies for implementation elsewhere, and another for what they labeled "empirical linkages" of distractions with how teachers might cope with these. About the first, conceptual level, one juror summarized the jury's discussion by stating, "Certain findings, concepts, and general frequency information about problems are ready for dissemination. The data were powerful and very believable in terms of 'Here are the ways that you can think about distractions. Is it a common problem? Are you different from other teachers? Well, on the average we find that these things occur at this level.'"

Empirical linkages between distractions and thair causality, and what teachers might use as coping strategies, were found to be weaker. For instance, pointing to the team's failure to bring about change in the intervention strategy and to achieve impact in terms of their specific findings in their training, a juror said, "Maybe the strategic way to intervene would be not at the global level of [a teacher's] responses to distractions but, given that sixty percent of distractions came from three students, maybe teaching behavior [should be] vis a vis these three students as structural elements rather than what could be done [re] general reactions to distractions." Thus, the jury based their judgment for this last point on what was described as the research intervention, as well as potential, but missing, data for specific students' behavior related to most of the distractions for a given teacher and how best she coped with them.

About this last point, the jury recognized that the California IR&DT team has been advised to eliminate from their design this student focus because of time limitations. Still, the jury found that inasmuch as so many distractions were caused by the same students, some of the important empirical linkages between distractions and how best to cope with them might be at the individual student level, and this possibility was eliminated in their design.

This comprises the judgments made by the jury for the reports submitted by the California IR&DT team. Following are those judgments made for the second IR&DT site in Vermont.

Judgment of the Vermont IR&DT team's research. For each of the criteria for rigor of the research conducted by the Vermont IR&DT team, the jury reached consensus. Their summary statements follow. In addition, particularly relevant or clarifying statements of individual jury members are reported from the transcripts of the meeting.

> Criterion 1--Internal validity of the research question: How was the research question determined?
>
> Criterion 1.a--Review of the literature: Was a review of relevant literature conducted in relation to establishing that the research question is of concern to teachers?
>
> - Overall judgment: As rigorous as typical educational research.

The jury commended the Vermont IR&DT team for courage in attacking the question they selected because, in the words of one of the jurors, "There isn't much literature supporting [it]." However, it was pointed out that related literature, particularly in teacher perceptions and in teacher morale variables, does exist, and conjectured that these may have been missed because of the labels used for retrieval. Thus, as one juror put it, "Simply reviewing the literature would not [reveal] what teachers are interested in [in relation to this question]."

> Criterion 1.b--Assessment of needs: Was an assessment of teachers' needs conducted to determine the importance of the problem?
>
> - Overall judgment: Much more rigorous than typical educational research.

In support of their comments above, jury members unanimously complimented the Vermont IR&DT team for the manner in which they assessed teachers' needs, thereby establishing to more than satisfactory degree the internal validity of their research question. Further, the jury cited this process as important for all researchers to consider, even though it is not common to typical educational research practices.

> Criterion 1.c--Relevance to teachers: Is the research topic perceived by teachers to be relevant?
>
> - Overall judgment: Much more rigorous than typical educational research.

Clearly, the jury found efforts of the Vermont IR&DT team to be exemplary in establishing the relevance of their question to teachers. "It seemed to be relevant to the teachers in the sense that these are important questions to address," stated one juror. Another said, "Very often, research is done because one person has a burning interest in something, and not because there is a community interest. In this instance, they [even] extended it to a larger community of teachers. They really checked their constituency."

> Criterion 1.d--Grounding of the problem: Is the problem selected for inquiry classroom-based? Will it serve to inform the solution of classroom problems?
>
> - Overall judgment: Much more rigorous than typical educational research.

The jury agreed that much more rigor than usually is demonstrated in educational inquiry had been demonstrated by the Vermont IR&DT team in insuring that the problem they had selected was classroom-based.

> Criterion 1.e--Adequacy of sampling: Were sufficient numbers of teachers surveyed to establish the need for the research study?
>
> - Overall judgment: Much more rigorous than typical educational research.

In establishing internal validity of their research question, the Vermont IR&DT team was recognized by the jury to have more than adequately sampled teacher populations. As one juror stated, "There was pretty good linkage to insure that the question would be of relevance and interest to teachers. In addition to their own initial list, and working toward consensus within that team, there is a rather useful attempt to involve [others. This] suggested that their interests probably would transcend their own immediate interests."

> Criterion 2--External validity of the research question: How is the research question related to other research in the area of investigation?
>
> Criterion 2.a--Significance of the problem: In relation to previous research conducted, is the problem perceived to be significant?
>
> - Overall judgment: Somewhat less rigorous than typical educational research.

Concern was registered by jury members that, in terms of establishing external validity of their question, the Vermont IR&DT team was not as thorough as they should have been. A juror said, "I'm bothered a bit in the way in which the problem is stated. There is the easy assumption that mood does relate and is important, as opposed to [a position] that this is something that is salient to all of us. Are we affected by it?" Thus, jurors were concerned that, at least in the way they present it in their reporting, the team moved too quickly to their assumption that mood does relate without establishing connections to evidence from prior research that this might be so.

> Criterion 2.b--Review of the literature: Has a thorough review of the literature of related research been conducted? Was care taken to establish appropriate linkages to prior work and to identify appropriate variables to study?
>
> - Overall judgment: Much less rigorous than typical educational research.

In reaching their judgment on this criterion, the jury suggested that a thorough literature review might have afforded the Vermont IR&DT team the opportunity to question some of their variables and measurement procedures. As will be seen later, these became considerably troublesome to the jury. For instance, one juror stated, "This [a literature search] would have been useful, particularly along the lines of early on getting them to question the extent to which affective measures are going to 'spread' teachers out. And how much variance of affect they could expect to find." Another said, "What about the significance of the problem? Will it lead to improvement? We never learned if they addressed this."

> Criterion 3--Clarity of research design: Are the tasks of inquiry explicitly described and appropriate given the research question?

> Criterion 3.a--Clarity of conceptualization: Is there clear documentation of linkages established between the research topic, the problem definition, identification of phenomena to be studied, clarification of questions to be asked, identification of sources of data, and description of information to be obtained?

- Overall judgment: Somewhat less rigorous than typical educational research.

Although the jury recognized that the Vermont IR&DT team was venturing into "some very tough territory" with their topic, there was major concern raised over the conceptualization of the research. In fact, instances of what the jury described as "wrestling with conceptual clarification" seemed to be lacking in what was reported. One juror said, "I can't recall reading about the process that led from needs assessment to 'What are competing ways by which we might measure mood?' or 'What are the ways in which mood should influence behavior, from our point of view to the point of the literature?' or 'How might we get measures that are consistent with that?'" Another commented, "There's almost a vacuum between problem definition and processing of information to terms. It's almost like someone was assigned to go out and find mood and find ways that can measure it, but with little [attention paid to] what might tie this whole process together." Finally, the jury agreed that the report does not clearly document how the team moved from step to step in the conceptualization process.

> Criterion 3.b--Definition of terms: Are terms defined clearly enough such that they are operable for answering the research question?

- Overall judgment: Somewhat more rigorous than typical educational research.

Definition of terms concerning how to define mood and supportive instructional behavior were judged to be somewhat more rigorous than typical educational research. However, the jury made clear that, while terms were clearly enough defined, they placed a heavy qualification on the appropriateness of the terms from a validity standpoint. In regard to this, one juror said, "Maybe, in a validity sense, operational definition of mood is a poor one. But I don't know because I haven't seen the alternative conceptualization [in this report]. Once accepting the context, however, the measures are reasonable."

> Criterion 3.c--Objectives: Are the objectives of the study consistent with the research question and phenomena under investigation?

- Overall judgment: As rigorous as typical educational research.

As indicated, the jury had no difficulty understanding the objectives of the research.

> Criterion 4--Data collection procedures: Were data collection procedures constructed that are appropriate to the task?

> Criterion 4.a--Relationship to objectives: To what degree were data collection procedures relevant to and consistent with the research objectives?

- Overall judgment: As rigorous as typical educational research.

The jury judged the instrument used to measure mood, and the manner used by the Vermont IR&DT team to measure supportive instructional behaviors to be as rigorous as those used in typical educational research.

> Criterion 4.b--Scope or width: Are the data sufficiently expansive to allow for completeness of explanation of phenomena observed?

- Overall judgment: As rigorous as typical educational research.

Recognizing that this was an exploratory study of a difficult subject, the jury judged the scope or width of data to be as rigorous as that of other educational research. Although they complimented the Vermont IR&DT team for utilizing both quantitative and qualitative data, the jury commented that the data seemed to limit the possibilities of "going back to do some hunting." In this sense, one juror stated, "Some of the particular measures used to go after elements are not particularly sensitive," thus limiting their utility.

> Criterion 4.c--Sampling: Were sampling procedures used appropriately such that sufficient evidence of fidelity is established between what was observed and what kinds of data were collected?
>
> - Overall judgment: Much less rigorous than typical educational research.

Several sampling errors were cited by the jury in rendering this judgment. First was the selection of the teachers for the research sample. Commented one juror, "There was an easy assumption that there would be variance in mood, ipso facto." Given that mood variance was what the team sought, the jury suggested that their sample might have reflected other than variables like urbanness, suburbanness, and ruralness.

A second error rested in the failure to conduct adequate testing of their instrument. "The [mood] instrument simply was not producing variance," stated one juror. "It seems to me there were opportunities to become smarter about this by simple testing of the instrument." The jury suggested that such testing may have enabled the Vermont IR&DT team to avoid some of the subsequent "traps."

Another sampling error centered around the decision of which events to observe and when to observe them. Given that mood variance was needed in order to establish grounds for pursuing the research question, the jury suggested that the Vermont IR&DT team might have striven for those times which produced stress rather than focusing on randomness of events across days. This might have enhanced their chances of finding such variance.

Finally, the jury commented on the mood recall procedures, raising a question of whether the manner in which interviews were conducted served to control the recalling process. By directing the teacher to a specific event and asking, "You did this this morning. How did you feel?" it was suggested that the teacher was really verifying what occurred. A much more open-ended procedure might have centered on requiring the teacher to recall moods or mood shifts during the day and then tie these to events. In addition, this procedure seemed to be further confounded by the reliance upon multiple observers and the possibility that there was little consistency across observers.

> Criterion 5--Adequacy of data collection: Were procedures for developing and using data collection clearly and adequately documented and described?
>
> Criterion 5.a--Reliability of data collection instruments: Was sufficient reliability of data collection instruments established and clearly reported?
>
> - Overall judgment: Much less rigorous than typical educational research.

Many of the jury's concerns above were echoed in their judgment here. In particular, the jury pointed to the weakness of reliability of some of the measures of teacher mood when compared with the observational measures.

> Criterion 5.b--Reliability of data collection process: Was sufficient reliability of the data collection process established and clearly documented and reported?
>
> - Overall judgment: Somewhat more rigorous than typical educational research.

The jury found no problems with reliability of using the instruments. In rendering this judgment, they included also the qualitative data collection procedures used by the naturalistic observers.

> Criterion 5.c--Replicability of data collection: Are data collection instruments and the process clearly enough described so that they can be used by other researchers?
>
> - Overall judgment: Somewhat less rigorous than typical educational research.

Potential for replication was judged to be weak and uneven. While the jury found some aspects to be replicable, the failure to document completely and describe procedures clearly render it impossible to judge the degree to which one might easily replicate them.

> Criterion 5.d--Observer training: Were observers trained appropriately and to a sufficient level of reliability? Were these procedures clearly described?
>
> - Overall judgment: As rigorous as typical educational research.

Observer training was found to be as rigorous as what typically might be found in educational research by the jury. They were satisfied that procedures had been properly described and documented.

> Criterion 5.e--Validity and appropriateness: Were the data collection instruments and process valid and appropriate to the question under investigation and to the sources of data tapped?
>
> - Overall judgment: Much less rigorous than typical educational research.

Earlier, the jury raised some questions about the clarity of conceptualization of the research, and found validity of the data collection instruments and process to be problematic. Observed one juror, "Once you're bound to the operational definitions, at some levels it's not too bad. But for the category of validity, some questions ought to be assumed. Even though there are explicit objectives, the construct validity is weak." Another juror pointed out that this was true particularly for the category of recalled moods.

> Criterion 6--Data analysis: Were data analysis procedures documented and reported clearly enough to enable judgment of their effectiveness in answering the research question?
>
> Criterion 6.a--Data reduction procedures: Were the procedures used to reduce data appropriate to understanding how they provide information about the question under inquiry?
>
> - Overall judgment: Much less rigorous than typical educational research.

An overall concern of the jury for this general area grows from the lack of variance among mood scores of teachers. As one juror put it, "There's just simply no variance within that sample. It's really the construct validity issue again, and the error in sampling, which have resulted in this." Another said, "I already had variance problems to begin with, and they compounded those variance problems by using the ranking procedure." A question asked by the jury was why raw scores were not used instead of ranking.

Other problems were raised by the statement in the report that, in the process of reducing the data whenever the researcher thought it appropriate, they would do a reliability check. The jury could not find a reasonable definition of when would have been considered to be appropriate. In addition, evidence of those reliability checks was lacking.

> Criterion 6.b--Awareness of options: Is the data reduction sufficiently illustrative that the researchers were aware of data reduction options and selected from among these appropriately?
>
> - Overall judgment: Much less rigorous than typical educational research.

The jury agreed that, generally, there were numerous options which existed for reducing the data even though there might have been problems with the data themselves for answering the questions. However, they could cite no specific evidence from the report that the researchers were aware of these options and had explored their potential use. In fact, given that the jury earlier judged the data to have sufficient width, they were surprised that the Vermont IR&DT team had not taken advantage of the possibilities for alternative data reduction strategies and tried some of these. This feeling is substantiated in their judgment below regarding potential for secondary analysis.

> Criterion 6.c--Potential for secondary analysis: Is there sufficient potential for others to analyze the data given the information provided in the report?
>
> - Overall judgment: As rigorous as typical educational research.

As judged by the jury, the data appear to lend themselves reasonably to potential secondary analyses by others. However, the jury qualified their judgment by pointing out that they are relying for evidence on what was reported.

> Criterion 6.d--Data analysis: Was analysis of the data appropriate to the research question(s) asked? Did analysis serve to answer them?
>
> - Overall judgment: Much less rigorous than typical educational research.

Given the problems with conceptualization and data collection so far in their deliberations, the jury naturally found the data analysis to be considerably inadequate. One juror said, "I had a real problem with the data analysis in terms of answering the questions. I think what they have done is to present the data and then jump it [to the interpretation]." Agreeing, a second juror stated, "Lots more analysis can be done with the data they have in relation to their question." Another said, "An interesting characterization is that, after developing an interest in answering specific questions, instead of continuing to think about those interests, it was almost like they went to a research 'board' and ignored what they had." It was apparent to the jury that more time should have been budgeted to analyze data than apparently was the case.

> Criterion 6.e--Presentation of data: Are all data presented necessary to understanding what was observed in relation to answering the research question(s)?
>
> - Overall judgment: Much less rigorous than typical educational research.

Reflecting their concerns from the preceding discussion of their judgment of other aspects of data analysis, the jury found the Vermont IR&DT team's presentation of their data to be much less rigorous than what one might typically find in educational research.

Criterion 7--Interpretation of findings: Is there evidence that findings are interpreted appropriately and completely?

Criterion 7.a--Process of interpreting findings: Did the involvement of teachers in the process of interpretation add anything significant or different to what was produced?

- Overall judgment: As rigorous as typical educational research.

Although the jury agreed that teachers on the Vermont IR&DT team seemed to be involved in the process of interpretation of findings, they did not find that this in itself added to the rigor of the study or led to innovative or different findings. On the other hand, teacher involvement did not detract from the interpretation. Given that teacher involvement is an unusual aspect of the IR&DT strategy, one of the jurors asked about the involvement of teachers other than those on the team in the interpretation process. "This might insure that it's not of interest only to a group of teachers, but it becomes more sensitive and relevant to a larger group of teachers." In fact, the jury was unable to determine if teachers had participated in interpretation beyond approving the report. As one juror commented, "The thing that I'm missing is that when I look at the interpretation of the data, I see nothing distinguished about it. In a sense, there are a number of researchers who would have done the data analysis in comparable ways and come to the same interpretations. Therefore, it's hard for me to infer that the involvement of the teachers improved the process."

Criterion 7.b--Evidence for interpretation: To what degree is there fidelity between interpretation, data analysis, and the research question, i.e., is there a sound base on which interpretation rests?

- Overall judgment: Much less rigorous than typical educational research.

The inability of the Vermont IR&DT team to tie its data analysis through careful linkage back to their original research questions was believed to have resulted in critical leaps apparently taken in reaching interpretation. "The thing that bothers me is the rapid shift from qualified statements to what the superintendent ought to do," commented one juror. Another juror stated, "It's as though a decision was made to analyze and present data, and then forget about it when moving to interpretations." This feeling is again reflected below in the jury's consideration of the rigor of conclusions drawn.

> Criterion 8--Conclusions: Are conclusions rational given the research questions and supporting data and procedures?
>
> Criterion 8.a--Overreach/underreach: Do conclusions about answering the research question(s) go beyond boundaries of reasonableness given the data presented and their reduction, analysis, and interpretation? Is there evidence in the documentation that conclusions do not make full use of information potentially available (e.g., alternative data interpretation and analysis)?
>
> - Overall judgment: Much less rigorous than typical educational research.

Both for overreach and underreach, the jury found the Vermont IR&DT team's research report to be much less rigorous than that of typical educational research. In terms of overreach, the jury thought the interpretation went far beyond what was credible given the data base described. The obvious leaps cited in their earlier judgments provide further concerns of the jury. As one juror said, "I found myself asking, 'Where did you get that from?' and when I went back to the data it wasn't there."

On the other hand, as they also indicated earlier, members of the jury thought that much more could have been done with the data the Vermont IR&DT team had. "The lack of apparent awareness, both for data reduction and data analysis, presented great problems," stated one juror.

A final admonition concerning the manner of presentation of conclusions is reflected in the comment made by this juror: "Despite the fact that a person spent a year-and-a-half doing something, the way in which he or she conveys it to others may make the contribution negative. When I see something that looks like nonsense, then, personally, I'll say it's nonsense!"

> Criterion 8.b--Statement of outcomes: Do the conclusions make a clear and reasonable statement of what was learned about the research question(s)?
>
> - Overall judgment: Much less rigorous than typical educational research.

In the jury's opinion, there is no clear statement about what was learned. Even though this was labeled an exploratory study by the Vermont IR&DT team, there is no evidence to warrant the claim made by the team that they found clear evidence to support that mood affects supportive instructional behavior.

> Criterion 8.c--Sensitivity to limitations. Is there exhibited in the documentation a sensitivity to the potential limitations of the data for drawing conclusions?
>
> - Overall judgment: Much less rigorous than typical educational research.

In prior statements and judgments, the jury dwelled on the potential for the data base as it has been presented in the Vermont IR&DT team's report, and on their failure to realize this potential. Here, their concern rested primarily with the apparent license taken by the team in advancing conclusions which clearly exceed reasonable limits of the data they present. Just as the Vermont IR&DT team failed to tie their interpretations to the data collected and tie both to their research question, the liberties taken with the conclusions they draw indicate an absence of such sensitivity to the existing limitations.

> Criterion 8.d--Recommendations: Are reasonable recommendations made to the field concerning further study of the research question(s) and/or specific aspects of either it or the procedures used?
>
> - Overall judgment: Much less rigorous than typical educational research.

Given that the Vermont IR&DT team called their study exploratory, the jury expected to find reasonable recommendations to the field concerning what might now be studied as a result of their inquiry. Such recommendations were not made, and the jury had no basis for judging this criterion otherwise.

> Criterion 8.e--Readiness of findings for implementation: Are findings significant enough and clearly enough documented and presented such that they are immediately ready for dissemination?
>
> - Overall judgment: Much less rigorous than typical educational research.

In this, their final judgment of the Vermont IR&DT team's report, the jury judged the findings to be incomplete for dissemination, either to the general world of research on teaching or to those who might apply them in classrooms. Although the jury found the topic worthy of dissemination (i.e., that teachers are interested in mood), and thought the problems the team encountered in pursuing their research questions would be helpful for other researchers as documented evidence of their difficulty, they also noted that the team did not come to such conclusions and therefore could find no basis for other than the judgment assessed. However, as one juror pointed out, "I believe the data are there for a careful reanalysis. Given that this is done, there might be some things that would be helpful to others."

Usefulness of the Research to Knowledge Building and Theory Development

A second area for judging the two teams' r and d is the usefulness of the research conducted, in particular, how each contributes to building knowledge and developing theory. For this judgment, the second American College Dictionary definition for usefulness was applied meaning to be ". . .of practical use, as for doing work; producing material results; supplying common needs. . ." (1966, p. 1338). As for rigor, one of the claims for IR&DT discussed earlier was that r and d conducted in this fashion would be as useful as that conducted in the more conventional educational r and d mode. This judgment serves to examine this claim.

The focus of this evaluation was on the usefulness of each team's research to the research community. Other judgments concerning usefulness of the research to teachers and trainer/developers also were made, and these are reported later in this section. For this judgment, therefore, only researchers were selected who represented three settings in which educational research typically is conducted: a university, a local education agency, and an educational r and d center.

Three jurors were nominated to this jury and, prior to meeting together, were directed to read the research reports for each team and to perform two additional tasks. Each was to develop criteria for usefulness of educational research for purposes of knowledge building and theory development, drawing upon his understanding of usual standards for such practice. Then, each was asked to apply these criteria to the two IR&DT teams' research reports, making an independent evaluation of each in comparison with what was perceived to be typical of educational research in the field.

The meeting of the jury took place in San Francisco on Thursday, February 22, 1979. Criteria and evaluations were brought to the meeting by each juror, and these served as the basis on which judgments were made. Final criteria used and the judging of each team's research reports were determined by discussion and consensus decision making. A description of jury members, their criteria, and their judgments follow:

Members of the jury. The jury was comprised of three researchers. All were white males, and all brought considerable experience in educational research to the task.

As a professor on the Faculty of Educational Foundations and Research of

Ohio State University, the first juror considers himself to be a "pure teacher educator" in that he both teaches students in the advanced degree program in teacher education as well as conducts research in this area. His background in education practice is broad and includes experience both as a classroom teacher and as a principal at the elementary school level. Research interests are: teacher problem solving, teacher effectivness--particularly work in the areas of clarity of instruction, and Reflective Teaching. Currently he serves as co-editor for the research section of "The Journal of Teacher Education."

The second juror serves as Evaluation Specialist for the Portland, Oregon public schools. In this capacity, his interests include linking together the schools, universities, and r and d institutions in order to solve problems of classroom teachers. Evaluation is seen as a means for providing clarity of purpose and information on the success or failure in attaining identified goals as the process of problem-solving is enacted in these settings. He has taught mathematics at the high school level and research methodology at local colleges and universities. He has participated in and/or directed numerous educational r and d programs and has published widely in relation to these activities. Currently, he serves as president of his educational research association.

Educational innovation as it relates to the nature of change is the research interest of the third juror. His current position is as director of a major program at the Research and Development Center for Teacher Education, University of Texas at Austin. Recognized internationally for his developmental work in understanding the role of the individual in relation to educational innovation, he subsequently is published widely. Science education, the focus of both his undergraduate and graduate preparation, continues to be an enduring interest, and he participates actively in various roles to promote effectively its use.

Criteria. To assess the IR&DT teams' research for usefulness to knowledge building and theory development, the jury settled on seven major criteria as judgment points. These are presented next.

1. Significance of the problem: To what extent did the study focus on an educationally significant problem, particularly from the perspectives of educational research and research on teacher education?

2. Contribution to theory building: To what extent did the study relate to and contribute to theory building in the problem area identified by the research?

3. Contribution to usefulness of methods: To what extent did the study contribute research methodology that was new and/ or useful to other researchers engaged in similar inquiry?

4. Generalizability of findings: To what extent did the study permit generalization of the findings?

5. Potential impact on practitioners: To what extent would researchers, teacher educators, and practicing school personnel find the results of the study acceptable and/or within their scope of belief based upon conventional wisdom and practice?

6. Impact on participants: To what extent did the study make teacher participants more understanding of teaching, more aware of its complexity, more aware of the variables that contribute to the complexity of teaching?

7. Report writing: To what extent was the research reported clearly such that it is immediately usable for researchers, teachers, and teacher educators?

Application of criteria. Each of the two IR&DT teams' research reports were judged independently. In arriving at their judgments, jurors considered the reports separately and compared each with what they understood to be typical of educational research reported. The jury used a four-place judgment scale to gauge its judgments:

- Greatly useful
- Moderately useful
- Scarcely useful
- Not at all useful

Judgment of each team's research in relation to all of the eight criteria established for usefulness follows. It should be noted that no attempt was made by the jury to assign differential weighting to any of the criteria. Thus, a single criterion should not be considered to be mo-e important than another. In addition, on several criteria jurors did not reach consensus. While their judgments were not widely variable, they are recorded faithfully here in order that the three very different perspectives are represented accurately.

Judgment of the California IR&DT team's reserach. Although the jury worked toward consensus in its decisions for the eight criteria, there were interesting variations in judgments. On only one criterion was there agreement; however, on all others, registration of jurors' judgments was close. They are reported here as recorded. Particularly relevant or clarifying statements made by jurors also are presented. Included are both statements made during the jury meeting and those from written documents brought to the meeting by jurors.

> Criterion 1--Significance of the problem: To what extent did the study focus on an educationally significant problem, particularly from the perspectives of educational research and research on teacher education?
>
> - Overall judgment: Greatly useful (2 jurors); between "Greatly" and "Moderately" useful (1 juror).

Although the jury found the California IR&DT team's research problem to be highly significant, a degree of difference in judgment was made. The juror who judged the problem to be between "greatly" and "moderately" useful in regard to this criterion found the problem to be "interesting and tightly defined, but easy to study." Another juror said, "Evidence if becoming overwhelming that 'time on task' is the single most critical variable set in determining student learning. . .the reduction in instructional time due to distractions is a little researched and yet potentially significant area for affecting this critical educational variable. The relevance of the problem is manifested by the evaluative responses of the teachers in the training sessions. The question is clearly defined and presented." The third juror reported, "Teacher problems are by the very nature of their existence an educationally significant event. Classroom distractions or disruptions are among the problems teachers report as frequently occurring and difficult to resolve. . .Distractions are a source of lost time in classrooms. Since time-on-task appears to be related strongly to student achievement, time loss due to distractions should be eliminated." This juror also liked that "[team] members visited classrooms of other teachers to 'substantiate the universality of the [research] question' (quote taken from Evolution of the Study document)."

Finally, it was recommended by one juror that the "hundred or more questions" generated and eventually discarded by the California IR&DT team when they settled on their final research question be "tabulated, classified and reported as a significant by-product of this research effort. [These questions] are of great potential interest as a source of information about the concerns of teachers."

> Criterion 2--Contribution to theory building: To what extent did the study relate to and contribute to theory building in the problem area identified by the research?
>
> - Overall judgment: Moderately useful (1 juror); between "Moderately" and "Scarcely" useful (1 juror); and Scarcely useful (1 juror).

As with the first criterion, the jurors reported separate judgments for the California IR&DT research in relation to contribution to theory building. Differences among jurors rested more with specific concerns in relation to the concept of theory building itself. For instance, the juror who judged

San Diego's research to be scarcely useful explained that he did not expect major contributions to theory building inasmuch as the stated purpose of the research was exploratory. "It was acknowledged from the beginning," he stated, "both in the research process and the way the question has been formulated, that this was not theory-testing or necessarily [for] theory building." Although he acknowledged a "beginning contribution to theory," he also pointed to the nonrepresentativeness of the sample of teachers studied as a limiting factor for theory building.

The second juror, who judged the California research to fall between "moderately" and "scarcely" useful, stated about the team's work, "There was a lot of good definitional work going on, more than you normally see." In his view, a study of this size and scope could not hope to contribute significantly to becoming the basis for building a new model or theory. Still, he found modest contribution to theory building.

Illumination of some important phenomena formed the basis for how the third juror judged the California IR&DT team's research. In this respect, he found the definitions, the concepts, and the conditional propositions set forth by the California IR&DT team to be moderately useful contributions to theory building. As examples, he pointed to several aspects of the study itself. "Teachers proposed a list of common distractions and coping techniques, with two resultant classification schemata. In addition, the team established a set of three criteria that could be used to judge the relative effectiveness of the coping techniques (time, flow, elimination)." Although it disturbed him somewhat that the work of Kounin and Gump had been overlooked in citing previous research on distractions, he found ensuing insights, both during data collection and analysis and interpretation, to be indicative of theory building contributions. For example, he stated, "During classroom observations it was noted that 'a large portion of classroom distractions were caused by a few students' and that the same teacher coping technique might have a different effect on [each of] several students. . . Findings observed that many distractions occur regularly, that they seem to be similar across classrooms, that teachers use similar coping techniques which are modified by a teacher's 'management style' and contextual factors, and that certain distraction-coping linkages tend to be more effective than others." Finally, this juror found that information about reading instruction and disruptions during such instruction also could be used by reading researchers and teacher educators, a serendipitous payoff of the study.

As a footnote, a recommendation was made by one juror that further research about distractions should focus on students rather than the teacher. He said, "I think this [would be] an important next step toward devising a theory of learning, [and] not of instruction [per se]." In addition, he proposed that such information would complement the California IR&DT team's research.

> Criterion 3--Contribution to usefulness of methods: To what extent did the study contribute research methodology that was new and/or useful to other researchers engaged in similar inquiry?

- Overall judgment: Moderately useful.

On this criterion, judges agreed that the California IR&DT team contributed some research methodology that was new and/or useful. As examples, one juror said, "The instruments for identifying and classifying distractions, coping mechanisms, and their effects on instructional time, flow of instruction, and elimination of distraction are promising first efforts at conceptualizing these important educational constructs." However, he pointed out that they were uneven in terms of "implicit, narrow, underlying theory of instruction," and would have benefited from further field testing by others.

All three jurors commented on the successful balance between qualitative and quantitative methods. One juror, however, suggested that in terms of contribution to [qualitative] methodology, "I don't know that it contributes much. It certainly [re]affirms that you can collect some very rich data, [but] it confirms the methodology rather than contributing to it." Another juror commended the team for a "well designed study for the question asked and [adequate] rationales given for methodological decisions made." In addition, jurors liked some of the interesting computer-based data reduction and display techniques and thought these might possibly prove useful for other researchers.

> Criterion 4--Generalizability of findings: To what extent did the study permit generalization of the findings?
>
> - Overall judgment: Scarcely useful (1 juror); between "Scarcely" and "Not at all" useful (1 juror); Not at all useful (1 juror).

Before making judgment in regard to this criterion, jurors engaged in lengthy discussion about the appropriateness of using this criterion for judging research which is not, by nature of its chosen paradigms or the IR&DT process itself, intended to be generalizable. Thus, they qualified their judgments by indicating that they were using a definition for generalizability that is accepted in the research world but might have little meaning applied to an IR&DT team's output. Such a formal definition strives for building lawful inferences that hold across groups of people to whom you are attributing the condition, and is usually used to convey that generalizability has been established statistically.

Their quandary was summarized by this juror who said, "I'm a bit worried about this because I'm not sure it was ever the intention of [the California team] or of the IR&DT [strategy] to do studies from which you can generalize." Another said, "It's interesting to me as I've watched the process with the two

[IR&DT] teams and as I've worked in my own research with teachers to learn that there are other definitions for generalizability, and that teachers don't necessarily pay much attention to formal definitions generated by researchers."

However, although it was acknowledged that the nature of the study did not strive for generalizability, jurors pointed to two problems that potentially negated this possibility. First, participants were thought to be "nonrepresentative both to grade level as well as from the point of view of social, economic, and academic levels." Second, "The lack of a second check on observer reliability (qualitative observers) just makes me lose a lot of faith in the quantity of data they got."

With these reservations registered, the jury commended the California IR&DT team for pursuing their research and for not acceding to traditional researchers' concerns about generalizability. In the words of one juror: "This is a good first step in conceptualizing these things. Now we have to replicate, using the fine instrumentation with a larger, more representative sample of subjects and participants."

> Criterion 5--Potential impact on practitioners: To what extent would researchers, teacher educators, and practicing school personnel find the results of the study acceptable and/or within their scope of belief based upon conventional wisdom and practice?
>
> - Overall judgment: Between "Greatly" and "Moderately" useful (1 juror); Moderately useful (1 juror); between "Moderately" and "Scarcely" useful (1 juror).

Jurors again registered a split decision in regard to this criterion but, as before, their reasons specified importantly different perspectives. The juror who rated the California IR&DT team's research highest on this criterion did so based on the interest of the question to teachers, other researchers, and teacher educators. In his words, "Any kind of research finding can be delivered in ways that would be heard," thus rendering the California study useful for all practitioners given that it is delivered effectively.

The second juror said, "I like to think of a number of different practitioners--the teacher, administrator, staff development person, university professor--and my own attitude is that it [the California study] probably has an average potential for impact." This juror also pointed out that what might get in the way of impacting practitioners is if the information confronts the "conventional wisdom" of the practitioner about what constitutes "good" classroom practice. Even so, he didn't see this problem necessarily inherent in the California study and said, "I think it would be provocative and interesting. So I think it has an average chance of being successful."

Primary practitioner to the third juror was the teacher, or the person delivering the information to the teacher, like a staff development specialist. He rated the California study lower than the other jurors "because of the inconclusiveness of the findings, and the low generalizability. There is little that can be put into inservice or preservice [teacher training programs] now. It is too soon."

Still, all jurors agreed that the study potentially can impact a variety of educational practitioners, and that the pieces of the research and the ways they use it will vary across such persons, depending on their interests and functions.

> Criterion 6--Impact on participants: To what extent did the study make teacher participants more understanding of teaching, more aware of its complexity, more aware of the variables that contribute to the complexity of teaching?
>
> - Overall judgment: Between "Greatly" and "Moderately" useful (2 jurors); Moderately useful (1 juror).

The jury agreed that impact on participants was evident on the California IR&DT team, particularly in the case of teachers who were members of the team. They pointed to the Teacher Case Studies, which detailed statements made by teachers in relation to impact, as well as teacher evaluations in training sessions. In the words of one juror, "Teachers reported having learned new and valuable skills and were working to use them to improve their instructional effectiveness." Given that a major premise of the IR&DT strategy is that each team member will bring unique skills and insights to the process, but also will develop new ones, jurors were impressed that the research documents reflected such growth.

> Criterion 7--Report writing: To what extent was the research reported clearly such that it is immediately usable for researchers, teachers, and teacher educators?
>
> - Overall judgment: Greatly useful (2 jurors); Moderately useful (1 juror).

"I think the California report was extremely well written," stated one juror, summarizing the jury's judgment. "It's one of the most lucid things I've come across." Another juror said, "They answered the questions in the sequence that they came up, and they were careful to define terms." In addition, the jurors liked the data display tables and figures and commented on their appropriateness.

Only two weaknesses were reported. First, redundancy seemed to result in expanding the sheer length of the documents. As one juror said, "I think you could take the documents and reduce them considerably in size." The second concern centered around the use of stilted language used. While such language is common to researchers, teachers might not resonate to it use.

Other comments regarded the case studies themselves and the multiple uses to which they can be put by teachers through graduate students in teacher education. Reporting of narrative protocols, too, was seen to be positive in that such glimpses of classroom life rarely are depicted in research reports.

This comprises the judgments made by the jury for the California IR&DT

team's research. Following are the judgments made for the report from the second site, in Vermont.

Judgment of the Vermont IR&DT team's research. As with the California team's research, the jury worked toward consensus in their judgment of the Vermont IR&DT team's research. Jurors were able to do so for five criteria. As before, for each of the other two criteria, judgments were close. They are reported below, along with particularly relevant or clarifying statements made by jurors either during deliberations or from their written documents prepared before the meeting and used during it.

> Criterion 1--Significance of the problem: To what extent did the study focus on an educationally significant problem, particularly from the perspectives of educational research and research on teacher education?

- Overall judgment:

  --For the problem: Greatly useful (2 jurors); between "Greatly" and "Moderately" useful (1 juror).

  --For the question: Between "Scarcely" and "Not at all" useful.

The jury found itself in a quandary in judging the Vermont IR&DT team's research for this criterion. While jurors found the problem area to be interesting and potentially useful, they qualified their judgment in relation to the research question itself, which they found to be troublesome. One juror stated, "The overall question of the relationship between teachers' moods and their instructional behaviors was clear. The rationale for the partition of this overall question into six subquestions and the statements of these questions themselves was less [clear]." Another juror cited the general problem area as "a most interesting question [and] much more difficult to define [and] complex to study," but found that "the original question was run aside as the study developed." The third juror commented that, while he found the problem area itself potentially interesting, he found problematic the apparent underlying assumption that if teacher mood affected a teacher's instructional behavior, then this necessarily must affect sutdent behavior. In presenting as their model Duncan and Biddle's (1974) presage-process-product variables model for studying classroom teaching, the Vermont team, in his opinion, did not attend to other information in that book which focused on affective classroom variables. "Most of the affective climate research has been on indirect behavior," he pointed out, "[but] even then there's no support between affective climate and student [learning]. . .I mean, a teacher can be in a crabby mood all day, and the kids [still] can be learning, so what do we care?"

> Criterion 2--Contribution to theory building: To what extent did the study relate to and contribute to theory building in the problem area identified by the research?
>
> - Overall judgment: Between "Scarcely" and "Not at all" useful (2 jurors); Not at all useful (1 juror).

Jurors registered "real reservations" that the Vermont IR&DT team's research contributes to theory building. In so doing, they selected several problems which served to illustrate their concerns. "The question," stated one juror, "probably should be, 'What teacher behaviors are most related to student gain, and what teacher mood states are related to these teacher behaviors?' This would be more likely, [based upon] earlier research, to be linked with an outcome variable that we care about rather than one we aren't sure has a relationship anyway." In support, another juror said, "I think that the [instrument] selected to measure the instructional behavior didn't have to do fully with the whole range of concept of mood addressed. [In this respect] the theory wasn't developed." All jurors agreed that the literature both about mood and about teacher instructional behavior had not been reviewed sufficiently nor had results been discussed in relationship to this literature. This rendered theory building to be problematic at best. In light of the abundance of literature available in both areas--including, as one juror cited, "the mass of literature on mood. They used Nowlis' Mood Adjective Checklist, and Nowlis has been doing research on mood for years!"--jurors were surprised that a more thorough review of the literature had not been conducted and used.

Although the jury found the Vermont IR&DT team's research to be not very useful in terms of theory building, jurors agreed that the general problem area of the effects of teacher mood on instruction is potentially a rich area of investigation. One juror summarized by saying, "I don't want to lose the fact that there was interesting stuff here. It's just that this study didn't do it (contribute to theory building)."

> Criterion 3--Contribution to usefulness of methods: To what extent did the study contribute research methodology that was new and/or useful to other researchers engaged in similar inquiry?

- Overall judgment: Between "Scarcely" and "Not at all" useful.

On this criterion, jurors agreed that the Vermont IR&DT team's research contributed little that was new and/or useful to research methodology. As one juror put it, "Almost entirely existing theories, constructs, techniques, and even instruments were employed in the measurements related both to mood and supportive instructional behaviors." Still, in the opinion of another juror, "The design, measures, and data collection do not run parallel or directly address the question." In addition, he found problematic that "the procedures did not correspond with the objectives, rationale for methodological decisions was not given, and reliability and validity issues surrounding the mood measures were not addressed."

> Criterion 4--Generalizability of findings: To what extent did the study permit generalizability of the findings?

- Overall judgment: Not at all useful.

The jury's judgment on this criterion for the Vermont IR&DT team's research is summarized in the words of one juror who acknowledged, "This was basically a descriptive, exploratory study. That fact, combined with the restricted variance on the mood variable, has limited the impact of the overall findings on the construction of theory. Indeed, no formal attempt was made to evolve even a preliminary theoretical paradigm." As indicated by statements made for earlier criteria, the jury found that an underlying weakness in the research was the lack of conceptual clarity and the inability of the team to establish linkage in their design between the question, data collection methods, interpretations of findings and conclusions drawn.

> Criterion 5--Potential impact on practitioners: To what extent would researchers, teacher educators, and practicing school personnel find the results of the study acceptable and/or within their scope of belief based upon conventional wisdom and practice?
>
> - Overall judgment: Scarcely useful (1 juror); between "Scarcely" and "Not at all" useful (2 jurors).

Given their criticism for previous criteria, the jury doubted that the Vermont IR&DT team's research would have impact on practitioners. Findings on the relationship of mood and supportive instructional behaviors were found to be inconclusive and, therefore, of limited value. Stated one juror, "Neither the finding that mood is identifiable nor the analysis of the factors contributing to mood seem to provide advances over earlier research or practical wisdom." About this latter point, another juror commented, "Teachers would say, 'So what?' to these findings." One juror, however, pointed out that, since four of the nine teachers "were generally able to overcome the potentially deleterious effects of negative moods on their instruction, [analysis of this fact] could lead to further and more definitive research" about effects of teacher mood on instruction.

> Criterion 6--Impact on participants: To what extent did the study make teacher participants more understanding of teaching, more aware of its complexity, more aware of the variables that contribute to the complexity of teaching?

- Overall judgment: Between "Moderately" and "Scarcely" useful.

Jurors could find no evidence in the Vermont IR&DT team's research report that teachers were made more aware of the complexity of teacning as a result of participation in the research. One juror did find that "the teacher protocols and the inservice training evaluations imply that some teachers involved in the study did benefit," but this seemed to be a result of the inservice training course that was developed rather than participation in the research per se. Finally, one juror suggested that he had a "series of concerns about the long-range impact being negative as a result of [teachers in the sample] experiencing the feedback [on their protocols]."

> Criterion 7--Report writing: To what extent was the research reported clearly such that it is immediately usable for researchers, teachers, and teacher educators?

- Overall judgment: Scarcely useful.

For this final criterion, the jury found the Vermont IR&DT team's research report to be scarcely useful for others in that, as written, it is not clear how practitioners might make use of the information. Specifically, jurors pointed to such things as "the reader's questions are not answered as the reports unfold," and "the rationales for decisions made are not provided, leaving the reader confused at many points." In addition, jurors found much of the information redundant between the two volumes. Finally, the final chapter on conclusions was particularly troublesome to jurors in that they found little evidence to tie conclusions made back to data analysis and interpretation, and even more difficulty in understanding how these addressed the question under study.

Rigor of the Training/Development

The third area for judgment of the two IR&DT teams' efforts centers on the rigor with which the training/development was conducted. It will be recalled that an undergirding assumption made for IR&DT was that research and development conducted in this way would meet standards of rigor in comparison with r and d conducted in more conventional ways.

Rigor here is defined the same as it was for the earlier discussion of rigor of the research, intending to convey notions of scientific rigor, i.e., strictly precise, exact, accurate adherence to standards of excellence. For this jury, application focused only on those aspects of how each team developed training for other teachers based on both the findings and the strategies used in the research process. Thus, the training/development report from each team served as the primary source of information, although jurors also were given sets of the research documents as well to provide information about the origin of the training programs.

Persons nominated to the jury represented three perspectives and settings in which training/development typically occurs: a local education agency, with emphasis on inservice teacher education; a university, with emphasis on both preservice and inservice teacher education; and a university with emphasis primarily on advanced academic degrees in teacher education. Prior to meeting, jurors were asked to develop criteria for rigor of the training/development based upon their understanding of usual standards for such practice. Then, they were to apply these criteria independently to the teams' training reports comparing each with what they perceived in their experiences to be typical of educational training/development reports.

Criteria and judgments were brought to the meeting held in Chicago, Illinois on Monday, February 26, 1979 and used as the basis for judging the teams' reports. As with other juries, final criteria used as well as judgments made were accomplished by discussion and consensus decision making. A description of the jurors, their criteria, and their judgments follows.

Members of the jury. Two females and one male comprised the jury, bringing to the task considerable experience from each of their respective worlds.

Designing and implementing staff development programs for approximately 12,000 persons who work in the 180 schools of the Montgomery County, Maryland schools is the primary concern of the first juror. A former teacher of French at both secondary and elementary school levels, she also has served as a teacher-coordinator and teacher-specialist in staff development activities. Since 1969 she has directed the Division of Career Programs, Department of Staff Development for her school district. In this role she has been responsible for administering a program of over 300 courses of training for both professional and support staff.

A background of seven years of teaching from Kindergarten to Grade 12 complements the current role of the second juror as Associate Dean for Program Development, College of Education, Michigan State University. As well, she serves as co-director for the Institute for Research on Teaching at MSU. In these capacities, she is interested in bringing together diverse people and perspectives for particular research, development, and teaching programs. She has published widely and is recognized for her work in developing programs and products for teacher education. Currently, she is engaged in constructing a program in research on teacher education.

The third juror also represents public school experience, both as teacher and principal at the elementary school level. His interests range from curriculum theory and its application to creative approaches to both inservice and preservice teacher education, to alternative schools, to developing innovative teacher training programs to incorporate knowledge gained from the above experiences. Currently an associate professor of teacher education at the University of Minnesota, he has published widely in relation to the above enumerated interests. Most recently, he is project co-director for a major study of inservice education sponsored by the National Center for Education Statistics and the National Teacher Corps.

Criteria. Ten major criteria with fifteen judgment points were generated by the jury. These are presented below.

1. Importance of the training focus to teaching: To what extent was the focus of the training central to either the problems of instructional practice or important functions of a teacher's job? Was training derived from a need identified systematically or validated by the client group?

2. Appropriateness of knowledge base: To what degree was there established a respectable and useful knowledge base for addressing training re the problem? Was there established a conceptual coherency that derived either from explicit assumptions about teaching or from a theoretical/empirical foundation(s)? Were training objectives consistent with an implied learning hierarchy for achieving them, i.e., was a range of learning levels made possible, from developing awareness, to analysis, to synthesis, to application?

3. Effectiveness of training design: Was the training constructed such that an appropriate link was established between a knowledge base and a specific client group and capable instructors? Did the training program allow for flexibility of outcomes?

4. Specification of training objectives: To what extent were each of the following addressed?

   a. Statement of purpose: Was the overall purpose of the training program clearly stated?

   b. Clarity of objectives: To what degree were objectives specified such that desired training outcomes were made easily identifiable?

   c. Relationship of objectives to purpose: To what extent were both major and enabling objectives related to the stated purpose of the training program?

5. Procedural and role expectations: To what extent did the training program address procedural and role expectations and norms of the participants?

6. Assessment and selection of instructional resources: Were instructional resources--both human and material--utilized such that compatibility with training outcomes was accomplished? To what extent were resources interesting and of high quality? Were they easily accessible? Did they provide diagnostic capabilities? Did they accommodate a range of instructional attainment levels from knowledge acquisition to application? To what extent were time and cost effectiveness considered?

7. Appropriateness and timeliness of training strategies: To what extent did training strategies reflect appropriateness in terms of (a) potential transfer of resultant skills to the classroom? (b) the technical and/or psychological support given teachers as a result of participating in training? (c) opportunities to practice skills during training? (d) feedback of training results to participants? (e) on-site followup of training with participants? (f) use of differentiated instruction in training? To what extent were training strategies timely, both in terms of when a given strategy was used (sequence) and how much time was required to attain a given objective (duration)?

8. Rationale for length of training: Was there established a clear, logical rationale for the length of training, both in terms of individual sessions as well as the total training package?

9. Evaluation of outcomes: To what extent did evaluation of outcomes attend to each of the following?

   a. Appropriateness of measures: Were measures appropriate for achieving stated outcomes, and were they specified?

   b. Evidence of achievement: Was evidence provided that outcome measures had been achieved, including criterion levels?

   c. Feedback to participants: Was feedback provided to participants such that next logical steps following training could be identified?

   d. Feedback to instructors: Were both formative and summative feedback mechanisms built into the training program such that instructors could adjust training appropriately either during training or after?

10. Incentives for participation: To what extent did the training program attend to, both implicitly and explicitly, incentives for participants such that they perceived training outcomes to be useful and valuable?

Application of criteria. Criteria were applied independently to each of the two IR&DT teams' training reports. To make their judgments jurors compared each of the reports with what they understood to be typical of educational training programs. Jurors pointed out, however, that they were referencing as their norm one of four settings in which such programs are typical: those designed by a school district professional development or inservice education staff; those designed as one of a Teacher Center's activities; those offered by professors in workshop format, usually taken for professional growth credit and not applicable to work towards a higher education degree; and those which are part of a regular degree program offered at an institution of higher education.

A five place judgment scale was developed for purposes of recording judgments:

- Ideal training program
- More rigorous than typical training programs
- As rigorous as the norm, or typical training programs
- Less rigorous than typical training programs
- Highly unsatisfactory training program.

A discussion follows of the evaluation of each IR&DT team's training/development report in relation to the fifteen judgment points of the ten criteria for rigor of the training program. The jury did not assign differential weighting to criteria or judgment points. Thus, one criterion or judgment point should not be interpreted to be more important than others.

Judgment of the California IR&DT Team's training. The jury worked for consensus on all ten criteria, and reached it on all but two of the fifteen judgment points in evaluating the California IR&DT team's training/development report. Below are their judgments. As well, particularly relevant or clarifying comments made by jurors are included.

> Criterion 1--Importance of the training focus to teaching: To what extent was the focus of the training central to either the problems of instructional practice or important functions of a teacher's job? Was training derived from a need identified systematically or validated by the client group?

- Overall judgment: More rigorous than typical training programs.

The California IR&DT team was commended by the jury for offering a focus in their training program that was considered to be important for teachers. With current national emphasis on increasing instructional time, the California topic was considered by the jury to be related critically to developing a teacher's understanding of what intrudes upon time and how to cope with such intrusions. In addition, the manner in which the team substantiated that this training need had been validated by a client group larger than just the participants was found to be significant.

> Criterion 2--Appropriateness of knowledge base: To what degree was there established a respectable and useful knowledge base for addressing training re the problem? Was there established a conceptual coherency that derived either from explicit assumptions about teaching or from a theoretical/empirical foundation(s)? Were training objectives consistent with an implied learning hierarchy for achieving them, i.e., was a range of learning levels made possible, from developing awareness, to analysis, to synthesis, to application?

- Overall judgment: As rigorous as the norm.

Jurors liked the conceptual coherency of the California IR&DT team's training design, but cited a narrowness of focus in the knowledge base. Commented one juror, "There was a narrowness in the way in which one looked at disruptions, and a narrowness in that they looked only at the teaching of reading." In addition, another juror stated, "I really liked the content of this, [but] I think there [exists] more of a knowledge base with respect to classroom management and with a variety of [other] perspectives they might have included [for participants]." Still, the jury found the California I&RDT team's training program to be as rigorous as the norm.

> Criterion 3--Effectiveness of training design: Was the training constructed such that an appropriate link was established between a knowledge base and a specific client group and capable instructors? Did the training program allow for flexibility of outcomes?

- Overall judgment: As rigorous as the norm (2 jurors); More rigorous than typical training programs (1 juror).

Jurors divided on the issue of this criterion for the California IR&DT team's training design, with two jurors judging it to be as rigorous as the norm but no more so, and one juror judging it to be more rigorous than that found typically in educational training programs. Their differences centered on the question of the degree to which the training design linked their research knowledge base with their client group, in this case those teachers participating in the training program.

While the jury granted that the California IR&DT team appropriately built their training program on the knowledge base generated in their research, its members divided over the issue of how well this knowledge base was tailored for the participants. The two jurors who scored it the lowest cited as evidence the fact that no attempt was made to adjust instruction based on the pretest given participants. Said one juror, "They found (in the pretest) that some people picked up seven distractions and other people picked up seventeen distractions. Yet they did absolutely nothing to change instruction for those differences." However, the other juror pointed to some individualization, saying, "People looked at their own printout and teachers identified their own coping strategies and formed their own linkages. So I would say that in terms of the content they dealt with, that [part of it] was individualized." The juror who scored highest for this criterion countered, "The very nature of the content of this (training program) lends itself to an individualized process.

All of the participants had a chance to refine the original system. They chose not to do it, but they developed their own lists (of intrusions and coping strategies). Therefore, I believe there was a definite accommodating to the participants."

However, the jury was in agreement that the training program allowed for flexible outcomes, and therefore found the California training design to be at least as rigorous as that typically found in training programs.

> Criterion 4--Specification of training objectives: To what extent were each of the following addressed?

For this criterion, the jury discussed all three sub-parts in relation each to the others. However, a separate judgment was made for each, with the jury reaching consensus on two of these and requesting separate judgments recorded for the third. Their judgments for each sub-part appear below, with their discussion following.

> Criterion 4.a--Statement of purpose: Was the overall purpose of the training program clearly stated?
>
> - Overall judgment: As rigorous as the norm.
>
> Criterion 4.b--Clarity of objectives: To what degree were objectives specified such that desired training outcomes were made easily identifiable?
>
> - Overall judgment: As rigorous as the norm (2 jurors); Less rigorous than typical training programs (1 juror).
>
> Criterion 4.c--Relationship of objectives to purpose: To what extent were both major and enabling objectives related to the stated purpose of the training program?
>
> - Overall judgment: As rigorous as the norm.

While the purpose of the California IR&DT team's training program was clearly stated and the objectives related to the overall purpose, the jurors divided in their opinion of the clarity with which objectives had been presented in the report.

In relation to the overall purpose for training, the jury was clear about

California's intent. "They're primarily concerned with time," summarized one juror, "and their purpose was to find how they could decrease the distractions in order to gain more instructional time." However, it was in the confusion between main objectives and enabling objectives and their relationship to achieving the purpose for training that two of the jurors found problems. Said one juror, "Now, I look at the objective and say, 'Yes, their objectives are very clear and I can identify them.' But I'm not sure how well they tie in to the overall purpose." Pushed to provide examples, (s)he continued, "[Some of] the enabling objectives lead to spinoffs that have additional value, but are not the prime target of what, it seems to me, the training program is after." Some of the spinoffs cited were features of the IR&DT process such as teachers determining the research question and learning to utilize an observation system that grew out of data collection strategies.

The dissenting juror found the clarity of the objectives of the California IR&DT team's training program to be less rigorous than typical educational training programs. "The way they wrote the objectives is misleading," stressed this juror. In particular, (s)he pointed to the objective that led one to believe the training program was designed to replicate the whole IR&DT process (Objective 2) even though this was not the intent.

> Criterion 5--Procedural and role expectations: To what extent did the training program address procedural and role expectations and norms of the participants?

- Overall judgment: More rigorous than typical training programs.

The jury was impressed that the California IR&DT team had incorporated into their training program ways to address and accommodate procedural and participants' role expectations and norms. Said a juror, "This team [demonstrated that they] had great understanding of the [IR&DT] process that they had gone through, and of each other." It was the opinion of the jury that this understanding was reflected in their training design.

For example, one juror liked the fact that the training program attended to teachers' individual differences. "Some teachers, having analyzed their classroom and their distractions and coping behavior, would find they probably couldn't change very much." For this juror, the design of the training allowed for adjustment to meet individual needs, and to focus on things like kinds of room arrangements which were not part of the research but emerged as possibilities during training.

> Criterion 6--Assessment and selection of instructional resources: Were instructional resources--both human and material--utilized such that compatibility with training outcomes was accomplished? To what extent were resources interesting and of high quality? Were they easily accessible? Did they provide diagnostic capabilities? Did they accommodate a range of instructional attainment levels from knowledge acquisition to application? To what extent were time and cost effectiveness considered?

- Overall judgment: As rigorous as the norm.

The California IR&DT team's training report was judged to be as rigorous as that found in typical educational training programs in terms of what instructional resources were selected and how they were assessed in relation to objectives for the training. Although no particularly unique resources were used, the jury noted that those selected seemed appropriate to instruction but were quite familiar to usual training practices. One minor criticism was raised by one juror who stated, "I am disappointed that they didn't neatly identify the materials they were going to use for each session."

> Criterion 7--Appropriateness and timeliness of training strategies: To what extent did training strategies reflect appropriateness in terms of (a) potential transfer of resultant skills to the classroom? (b) the technical and/or psychological support given teachers as a result of participating in training? (c) opportunities to practice skills during training? (d) feedback of training results to participants? (e) on-site followup of training with participants? (f) use of differentiated instruction in training? To what extent were training strategies timely, both in terms of when a given strategy was used (sequence) and how much time was required to attain a given objective (duration)?

- Overall judgment: More rigorous than typical training programs.

Jurors found the California IR&DT team's training more rigorous than the norm for this criterion, with strategies appropriate to the design and timely in their use. In particular, jurors pointed to the flexibility in the training and to the use of differentiated instruction beginning with the third session. As one juror put it, "By then, everyone was very much into his or her own histograms, and instruction was very different, with instructors working with participants individually." Adjusting instruction to fit the specific, immediate needs and interests of individual participants was viewed to increase the probability that skills learned would be transferred to the classroom.

> Criterion 8--Rationale for length of training: Was there established a clear, logical rationale for the length of training, both in terms of individual sessions as well as the total training package?

- Overall judgment: As rigorous as the norm.

While recognizing that the California IR&DT team allowed for much individualization of instruction in their training program, the jury nevertheless noted that the length of training was tied more to district requirements than to a clearly stated rationale. In this respect, the jury judged their training program to be as rigorous as that typically found in educational training programs.

Jurors particularly were concerned that most training programs, whether at an institution of higher education or at a local education agency, tend to be tied to a formula of thirty hours of instruction whether or not this much time is needed to complete course objectives. In that credit toward a degree or to qualify for incremental salary increases underlies the thirty-hour unit notion, jurors understood its almost automatic application. Still, it was suggested that, particularly when reporting training outcomes, a rationale for time allocation for each objective needs to be specified. As the jury indicated, no such rationale was given in the California report.

> Criterion 9--Evaluation of outcomes: To what extent did evaluation of outcomes attend to each of the following?
>
> Criterion 9.a--Appropriateness of measures: Were measures appropriate for achieving stated outcomes, and were they specified?

- Overall judgment: Less rigorous than typical training programs.

In evaluating the California IR&DT team's training report for this criterion, jurors reported that they had difficulty finding evidence in the report of measures used for substantiating that stated outcomes had been achieved. As one juror put it, "They didn't put their assessment measures with their objectives. I couldn't find them." The jury did note, however, that some of the difficulty might rest with the fact that the videotape used for preassessment and intended to be used again for postassessment had been stolen during training, making impossible the establishment of absolute fidelity between pre and posttests. However, jurors were puzzled as to what adjustment techniques had been used. Stated this juror, "The only reference to the posttest was that they lost it." While the jury was reasonably assured that outcomes had been achieved, particularly in light of the glowing assessment of training by the participants, the report did not discuss these in any detail. It was for this reason that the jury found the San Diego training report to lack rigor for this criterion.

> Criterion 9.b--Evidence of achievement: Was evidence provided that outcome measures had been achieved, including criterion levels?

- Overall judgment: Less rigorous than typical training programs.

Just as assessment measures had not been stated in their report, evidence of how achievement was attained and at what criterion levels was absent from the California IR&DT team's training report. The jury registered two problems with the report in this respect. First, while the jury understood that participants were trained to use a modified version of the observation checklist developed for the team's research, it was not clear what criterion level, if any, had been set for success. In relation to this, one juror said, "While they (instructors) could see in class, obviously, whether these people (participants) could do it (use observation forms in simulation) or not, I didn't know the degree to which they were able to do this. I needed a criterion level [for understanding]."

A second problem centered on the validity of observation checklists brought to class by participants. Noting that on the pretest a range of seven to seventeen distractions had been recorded by participants, a juror questioned, "How do you know that a person picked up an appropriate number of distractions? How do you know the accuracy of that person's observations?" A suggestion made by the jury to alleviate this problem was that the California IR&DT team might have worked to establish a degree of reliability in participants just as they had done with observers during the conducting of their research.

> Criterion 9.c--Feedback to participants: Was feedback provided to participants such that next logical steps following training could be identified?
>
> - Overall judgment: Between "As rigorous as" and "Less rigorous than" typical training programs.

The jury deliberated at length on this criterion for the California IR&DT team's training report. Essentially, discussion centered on the quality and intent of feedback to participants. Jurors recognized that much time in training sessions was devoted to participants analyzing their histograms.* However, since analysis took place in groups, it was not clear whether participants were getting evaluative feedback from the instructor, or if such group sessions were merely an instructional technique. This process was described thusly by a juror: "They sat down and they had either a teacher from the team or the trainer/developer from the team, and sometimes the researcher from the team, going through and analyzing with them their data. Now, they had to work with the data that their buddy had collected, and they had histograms that had been run. They compared this week with last week, and so on." The problem was identified by another juror who said, "They analyzed their histograms in groups. The question is did they get [evaluative] feedback from the instructor, or was this merely an instructional technique?"

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* Histograms are computer displays of the distractions and coping techniques occurring in the classrooms of each participant. These were developed using information from observation checklists filled out by each participant for his or her "buddy", another participant in training who teaches in the same school.

Another problem grew from the fact that, even if evaluative feedback from the instructor had been the intent, this might have been difficult to accomplish. Said one juror about this, "I don't see how the instructor could have given any meaningful feedback except [regarding] techniques of reading histograms, [e.g.,] what you can find in histograms, what kind of information you have there, how you can plot your own progress. The instructor knew no more about their (participants') behavior than he saw here (in the histograms). He didn't know any more about it than they did; they had the context."

Finally, the issue of observer reliability was raised. Given that histograms were developed from information obtained from each of the "buddy" training participants, confidence in such information, it was felt, could result only if observers had been trained to a reliable level. Since the California IR&DT team did not report that they had done this, it was assumed that information on histograms might be subject to question.

> Criterion 9.d--Feedback to instructors: Were both formative and summative feedback mechanisms built into the training program such that instructors could adjust training appropriately either during training or after?

- Overall judgment: More rigorous than typical training programs.

Jurors found the manner used by the California IR&DT team to gain participants' feedback about the course and the instructor(s) to be more rigorous than that found typically in training programs. Said one juror, "I like the insights." Another commented, "This was a novel way of collecting feedback without participants looking at reports. I like that."

> Criterion 10--Incentives for participation: To what extend did the training program attend to, both implicitly and explicitly, incentives for participants such that they perceived training outcomes to be useful and valuable?
>
> - Overall judgment: Ideal training program.

For this final criterion of their judgment of the California IR&DT team's training report, the jury recorded its highest rating. The jury was impressed with the alternatives available to participants in the way of remuneration. Substitutes were offered, for instance, to cover teachers' classes while they recorded observations in their buddy's classrooms. However, not all teachers wanted substitutes, and alternative strategies had to be devised. Course credit toward salary increments or pay at the negotiated school district rate for staff development classes were offered as alternatives as well. In addition, the jury found positive the use of a buddy system to provide support.

This comprises the judgments made by the jury for the California IR&DT team's training report. Following are the judgments made for the report from the Vermont team.

Judgment of the Vermont IR&DT team's training/development. Of the ten criteria generated by the jury, consensus was reached on all but two of the fifteen judgment points in evaluating the Vermont IR&DT team's training/development report. On those two occasions, jurors' opinions were close. Their judgments are reported below along with particularly relevant or clarifying statements made by individual jurors.

Criterion 1--Importance of the training focus for teaching: To what extent was the focus of the training central to either the problems of instructional practice or important functions of a teacher's job? Was training derived from a need identified systematically or validated by the client group?

- Overall judgment: As rigorous as the norm (1 juror); More rigorous than typical training programs (1 juror); between "More rigorous than typical" and "Ideal" training program (1 juror).

In comparison with typical educational training/development efforts, the Vermont IR&DT team's report was judged to be at least as rigorous for this criterion. In fact, two jurors rated the report higher. Jurors found the topic itself to be of enduring interest to teachers, but found some difficulty with the manner in which teacher mood and supportive instructional behavior were developed as constructs for training. In relation to the topic's interest among teachers, one juror stated, "Teachers are asking for help with these problems, and I think it's a result of so much happening in their world. [They have] a general dissatisfaction and concern about their effect on children. It's an important concern, but I frequently don't see many programs taking it very seriously." However, another juror reported ambivalent feelings, stating, "I would put it (training focus) in the middle (rate it as rigorous as the norm) in terms of its centrality and importance of educational impact."

Problems with the topic identified by the third juror were tied to operational definitions for the training of others re mood and supportive instructional behavior. "Mood here. . .is a kind of ephemeral thing and not a basic belief about children," (s)he said. "Mood shifts change from hour to hour. [So] mood itself [is not so important] a question as 'What are the factors that increase or decrease supportive instructional behavior?'" For this juror, much more attention could have been paid to training the participants in relationship to supportive instructional behavior, which was perceived to be more tangible than mood for training purposes.

> Criterion 2--Appropriateness of knowledge base: To what degree was there established a respectable and useful knowledge base for addressing training re the problem? Was there established a conceptual coherency that derived either from explicit assumptions about teaching or from a theoretical/empirical foundation(s)? Were training objectives consistent with an implied learning hierarchy for achieving them, i.e., was a range of learning levels made possible, from developing awareness, to analysis, to synthesis, to application?
>
> - Overall judgment: Between "Less rigorous than typical" and "Highly unsatisfactory" training program.

Although jurors agreed that objectives for the Vermont IR&DT team's training program attended to different phases of a learning hierarchy, they could not find in the report evidence that objectives reflected a conceptual coherency. In the words of one juror, "The objectives themselves were not cohesive. They did not relate to the purpose [of the training]." In addition, another juror cited the lack of a strong knowledge base on which to build the training program, stating, "On the one hand, here is an area that teachers see as very important, [but] the knowledge base itself isn't very strong. [In fact] the knowledge that could have been brought to bear was larger than what was utilized." Their concerns are refined further in the discussion below of Criterion 3.

> Criterion 3--Effectiveness of training design: Was the training constructed such that an appropriate link was established between a knowledge base and a specific client group and capable instructors? Did the training program allow for flexibility of outcomes?
>
> - Overall judgment: Less rigorous than typical training programs.

Building on their concerns above, the jury rated the effectiveness of the Vermont IR&DT team's training design to be less rigorous than that found typically in training programs. In particular, given that a strong knowledge base was lacking, it was difficult to ascertain a clear linkage between it and the client group for purposes of training. As one juror stated, "If we agreed that the knowledge base was hardly used, then I don't know how we can say that it was very well linked with the needs of the group." Another juror, however, cited as potential the use of ethnographic observation strategies for inquiring into mood and supportive instructional behavior in their own classrooms. Given that they did not have a strong knowledge base about these two phenomena, the team did well to utilize this strategy, at least in the opinion of this juror.

In addition, jurors pointed to other weaknesses. For instance, having given a preassessment to the group of six participants, "They didn't do anything with it insofar as relating [it] to participants' needs [and designing appropriate instruction] is concerned. They [only] kept it to compare with the posttest." Another problem centered on the fact that, with only six participants, no attempt was made by the Vermont IR&DT team to tailor instruction in any way. A final comment was made by a juror who said, "I question some of the strategies used for the design. It just doesn't seem to fit together."

> Criterion 4--Specification of training objectives: To what extent were each of the following addressed?
>
> Criterion 4.a--Statement of purpose: Was the overall purpose of the training program clearly stated?
>
> Criterion 4.b--Clarity of objectives: To what degree were objectives specified such that desired training outcomes were made easily identifiable?
>
> Criterion 4.c--Relationship of objectives to purpose: To what extent were both major and enabling objectives related to the stated purpose of the training program?
>
> - Overall judgment: As rigorous as the norm.

The jury examined simultaneously all three subparts of this criterion in applying them to the Vermont IR&DT training report. Separate judgments were made for each subpart, resulting in the same rating for all three. Thus, the jury determined that, in relation to specifying training objectives and in comparison to other educational training programs, the Vermont IR&DT team's report was as rigorous as the norm. The discussion here reflects the jury's unified treatment.

A major criticism leveled was that, while objectives were clearly stated and included a criterion level of acceptability, they did not seem to relate to an overall purpose. One juror wondered if "I was supposed to infer the central purpose (of the training)." Another questioned whether, had (s)he been a participant in the training, (s)he could get answers to questions such as, "What do [I] expect to be the benefit to [my] teaching of this course? What is the purpose? Is it to learn how to take notes of observable behavior? Is it to learn how to observe supportive instructional behavior? Is it to learn about ethnographic skills? Is it to learn about fluctuations in [my] moods? What's the focus?"

On the other hand, jurors found that each had inferred from the information contained in the report that an overall purpose was to look at supportive instructional behavior and to gain skill in using observational, descriptive techniques to do this. Even so, as one juror put it, "There are some implicit ideas there, but I'd like to see an explicit purpose if you're going to [use] nice, explicit, criterion-referenced objectives."

A final question raised concerned the "buddy system" used by the Vermont IR&DT team. While training paired teachers was an objective in the training design, the report fails to discuss whether and how the buddy system was accommodated when the teachers returned to school. Jurors would have liked this information presented in the report.

> Criterion 5--Procedural and role expectations: To what extent did the training program address procedural and role expectations and norms of the participants?
>
> - Overall judgment: Between "Less rigorous than" and "As rigorous" as the norm (2 jurors); As rigorous as the norm (1 juror).

As can be ascertained from their ratings, jurors were close in their judgment of the Vermont IR&DT team's training report regarding the extent to which both procedural and role expectations and norms of the participants were addressed at the onset of training. In pointing to the small size of the group being trained, one juror commented, "They did try to do some things, [but] I don't know how much. My inference is that it was probably fairly typical of first sessions [in which the group] tries to work some things through." Another juror stated, "My impression is they shared the objectives and discussed the objectives." However, the jury could find little evidence that attempts were made to assess participants' skills in relation to objectives and then adjust instructional objectives to accommodate these. Still, in comparison with other educational training programs, the jury found the Vermont program to be as rigorous for this criterion.

> Criterion 6--Assessment and selection of instructional resources: Were instructional resources--both human and material--utilized such that compatibility with training outcomes was accomplished? To what extent were resources interesting and of high quality? Were they easily accessible? Did they provide diagnostic capabilities? Did they accommodate a range of instructional attainment levels from knowledge acquisition to application? To what extent were time and cost effectiveness considered?

- Overall judgment: As rigorous as the norm.

In reaching this judgment for the Vermont IR&DT team's training report, jurors acknowledged that many instructional materials and strategies apparently were used. In summarizing some of these, one juror pointed to "a materials-to-be-used list. We know what was in the sample protocols. We know there were some videotapes and some instructions." However, jurors were puzzled inasmuch as no information was presented regarding what was contained in the training packages or sessions themselves. Said another juror, "We know what was in the research design in terms of what was contained in the training sessions, but we're not sure what was in the training design in terms of what was done."

Even so, jurors rated the training program for Vermont as rigorous as other educational training programs, basing much of this judgment on the feedback from participants provided in the Vermont IR&DT training report. Reasoning was that such feedback would not have been so positive if training elements themselves had not been productive.

A final concern in regard to this criterion was the few number of people being trained. Recognizing that this was perceived to be a pilot training effort, and that there were time and monetary constraints imposed by the nature of the whole r and d effort, jurors still raised conjecture as to whether others also might not have been included. This could have strenghtened the impact of outcomes of the training program. At the very least, the jury suggested that an important strategy for reporting such training would have been to provide a clear rationale for why training included only six participants. This was deemed to be important inasmuch as this was an unusually small number of participants in a training effort, and would provide important information to those reading the report.

> Criterion 7--Appropriateness and timeliness of training strategies: To what extent did training strategies reflect appropriateness in terms of (a) potential transfer of resultant skills to the classroom? (b) the technical and/or psychological support given teachers as a result of participating in training? (c) opportunities to practice skills during training? (d) feedback of training results to participants? (e) on-site followup of training with participants? (f) use of differentiated instruction in training? To what extent were training strategies timely, both in terms of when a given strategy was used (sequence) and how much time was required to attain a given objective (duration)?
>
> - Overall judgment: Between "As rigorous as" and "More rigorous than" typical educational training programs.

For this criterion the jury rated the Vermont IR&DT team's training report a little more rigorous than typical educational training programs. They did so primarily because psychological support, evidenced in the buddy system, indicated that skills gained by participants in observing behavior might have a good chance of transfer to the classroom. About this feature, one juror said, "Using the buddy system was [good] psychological support. They did get feedback based on their buddy's criteria, and they had on-site followup by their buddy (capability for each buddy to observe the other)."

In addition, jurors rated technical assistance about average, and could find no evidence in the report that the team provided differentiated instruction.

> Criterion 8--Rationale for length of training: Was there established a clear, logical rationale for the length of training, both in terms of individual sessions as well as the total training package?

- Overall judgment: As rigorous as the norm.

The Vermont IR&DT team's training program as reported was found by the jury to be as rigorous as the norm. "I think you fit the training to the time available," said a juror, "and I think that's what they did. [But] that's the norm, not the ideal." Jurors discussed at length the nature of most instructional programs which apparently are tied to a thirty-hour time frame. In jurors' experience, this is particularly true of institutions of higher education, and it was apparent that the Vermont IR&DT team followed usual procedures.

Concerns of the jury here related to the conflict between meeting total-hour requirements rather than allowing for less or more time depending on attainment of prescribed skills by the participants. As one juror put it, "They didn't discuss why they selected thirty hours. I was looking for the rationale that said, 'This is why we decided that they (participants) could achieve these skills in this time period.'" In addressing this issue, another juror said, "The delivery we often resort to is to use what we have available. But we can expand on out-of-class time much more than they (Vermont IR&DT team) were able to do here." In addition, the jury recognized that this was in essence a pilot training program in that it had not been offered before, so time needed to attain specified skills might have been unknown. However, the jury assumed that "the professional trainer certainly has had experience in training teachers and working with skill development and understanding how long it takes to accomplish certain kinds of objectives." Thus, the rationale for selecting only thirty hours of instruction proved to be troublesome for the jury, resulting in their judgment.

> Criterion 9--Evaluation of outcomes: To what extent did evaluation of outcomes attend to each of the following?

As with Criterion 4, "Specification of training objectives," the jury discussed all four subparts of this criterion simultaneously. However, they did make separate judgments for each, and these judgments were different. Individual judgments are presented below following the restatement of subpart, followed by a discussion of the jury's deliberations in relation to evaluation of the outcomes of training as reported by the Vermont IR&DT team.

> Criterion 9.a--Appropriateness of measures: Were measures appropriate for achieving stated outcomes, and were they specified?
>
> - Overall judgment: More rigorous than typical training programs.
>
> Criterion 9.b--Evidence of achievement: Was evidence provided that outcome measures had been achieved, including criterion levels?
>
> - Overall judgment: Less rigorous than typical training programs.
>
> Criterion 9.c--Feedback to participants: Was feedback provided to participants such that next logical steps following training could be identified?
>
> - Overall judgment: Less rigorous than typical training programs.
>
> Criterion 9.d--Feedback to instructors: Were both formative and summative feedback mechanisms built into the training program such that instructors could adjust training appropriately either during training or after?
>
> - Overall judgment: As rigorous as the norm.

In the opinion of the jury, while appropriate measures were clearly specified, their execution lacked rigor. "Assessment [measures] were well designed," commented a juror, "but they weren't carried out [rigorously]. All they used was self-assessment." Thus, their rating for the Vermont IR&DT team's training program in relation to appropriateness of measures was more rigorous than typical training programs, but evidence for achievement was judged to be less rigorous than that found in typical training programs.

Jurors also found feedback to participants to be less rigorous than that found in typical training programs. Commented this juror, "They did get feedback, but they didn't get feedback from anybody but their buddies." Additionally, jurors would have preferred avidence that some feedback from the instructors had been used. Particularly in relation to attaining prescribed objectives, participants probably would have found this to be helpful.

However, the jury found feedback to instructors to be as rigorous as the norm. While jurors cited that "they did a superb job of feedback to instructors," it was found to be difficult to assess which instructor was receiving which rating. "There were different things used at different times by different instructors," stated one juror, "and there were three different kinds of ratings." Thus, it was difficult for the jury to find in the report clear delineation of ratings for instructors as compared with ratings for the course in general. Given that the Vermont IR&DT team offered multiple activities with multiple instructors but did not break this out in their evaluations, this proved to be a problem.

> Criterion 10--Incentives for participation: To what extent did the training program attend to, both implicitly and explicity, incentives for participants such that they perceived training outcomes to be useful and valuable?
>
> - Overall judgment: More rigorous than typical training programs.

For this final criterion, the Vermont IR&DT team was cited by the jury for attending to both implicit and explicit incentives for participation.

"They had the tuition paid and they got [university] credit," said one juror. "It was free and they provided for negotiable credit." In addition, another juror said, "They also had administrative support." Finally, the jury recognized that the use of the buddy system, with two people from the same school participating in training, probably provided additional incentive.

Usefulness of the R and D to Practitioners

The fourth question regarding judgment of the research and development products of the two IR&DT teams was the nature and degree of its usefulness to practitioners. For this evaluation, practitioners were defined as representing three worlds: the world of the practicing elementary classroom teacher; the world of the staff developer at the building, school district, and intermediate educational agency levels; and the world of the teacher educator based at an institution of higher education and working with preservice training programs, graduate degree programs, and/or inservice education programs. Three juries were organized, each to represent one of these three worlds. As before, each jury was comprised of three people.

In order to make their judgments, jury members were directed to read both the research report(s) and the training/development report for each team. Thus, they had a broad understanding of the research conducted and how it was utilized to develop and implement a training program for other teachers. The jury members were asked to develop criteria for usefulness of the r and d based on their understanding of the general needs and concerns of their representative worlds. Then, they were asked to apply these criteria to the r and d of the two teams, making an independent evaluation of each in comparison with what they understood to be typical of other r and d efforts in their experience.

Criteria and evaluations were brought to the meeting of each jury and, together with those of other jury members, served as the basis on which judgment was to be made. Final criteria used, as well as the judging of each team's r and d, were accomplished by consensus decision of the members of each jury. A description of the judgment by each jury follows.

Teachers. An undergirding assumption of the IR&DT strategy is that r and d enacted in this way would focus on concerns of classroom teachers and, therefore, be perceived by them to be more useful. To render judgment from this perspective, it was determined to organize one of the juries to reflect the views of practicing classroom teachers. Thus, three teachers were selected from among those nominated. A conscious effort was made to include a teacher representing the organizational views of each of the two national teachers' organizations, the National Education Association (NEA) and the American Federation of Teachers (AFT). As well, a third teacher with some research experience was sought for the jury.

The jury met in San Francisco on Wednesday, February 21, 1979. Following is a discussion of their judgments of the California and Vermont IR&DT teams' research and training/development reports.

Members of the jury. The jury was comprised of three elementary school teachers. All were female, and two represented minority backgrounds. In addition, perspectives of the two national teachers' professional organizations (AFT and NEA) were represented.

The first teacher began her teaching career in Brooklyn, New York and has also taught in Jackson, Mississippi. Currently in the fifteenth year of her career, she teaches music to kindergarten through sixth-graders in Eaton Rapids, Michigan, an area she describes as relatively rural but near a large urban center. She has worked for two years on a half-time basis as a teacher collaborator with the Institute for Research on Teaching, Michigan State

University, and has continued in this capacity on a consultant basis. She is principal investigator for a study of the teacher as collaborator in conducting research.

The second teacher has taught the primary elementary grades for eighteen years in the Indianapolis, Indiana public schools. She currently chairs the Black Caucus of the National Education Association, and served as their representative to the NIE Standardized Teaching Conference. In these capacities, she travels the United States extensively representing NEA.

The third teacher is in her twelfth year of teaching. She has taught two years in the Chicago public schools (grades 3 and 5) and eight years in the San Francisco public schools (grades 5 and 6) where, for the past two years, she has served as a Program Resource Teacher. She has served on the Executive Board of the American Federation of Teachers (San Francisco) for the past six years.

Criteria. The jury developed nine criteria for judging the usefulness of educational r and d. These are as follows:

1. Topic: Is the topic of interest and relevant to solving problems or improving classroom practices as perceived by teachers at various grade levels?
2. Title: Does the title of the report(s) generate high enough teacher interest such that teachers will want to read it?
3. Format of presentation: To what extent does the format of the r and d reporting enable a teacher to make judgment about adoption/adaptation of the information and/or process?
4. Importance of information: To what extent does the r and d provide important information about teaching and learning in classrooms?
5. Immediate payoff: What was the immediate payoff in conducting the r and d for teachers on the team? For other teachers involved?
6. Long-term payoff: What is the possible long-term payoff in conducting the r and d for teachers on the team? For other teachers involved?

7. Levels of usefulness: For whom is the r and d intended to be most useful and how, i.e.,

   a. Applicability--How applicable is the r and d for use in classrooms? In schools? In school districts? By others?

   b. Utility--Is there sufficient information such that r and d results can be put to use personally by teachers? In their classrooms? By an entire school or school district?

   c. Timeliness--How timely is the r and d in terms of current needs and concerns of teachers for themselves? In their classrooms? In schools or school districts?

These criteria were applied independently to each of the two IR&DT teams' r and d as represented by their reports. In arriving at its judgments, the jury compared each team's efforts with other r and d efforts with which jurors were individually familiar. Additionally, the jury determined to report its judgment by developing summary statements for each criteria. These appear below.

Judgment of the California IR&DT team's r and d. For each of the criteria for usefulness as applied to the California IR&DT team's r and d reporting, the jury reached consensus. Its summary statements follow. In addition, particularly relevant or clarifying statements of individual jury members are reported from the transcripts of the meeting.

> Criterion 1--Topic: Is the topic of interest and relevant to solving problems or improving classroom practices as perceived by teachers at various grade levels?

The jury judged the topic of the California study to be relevant for and important to classroom teachers at all grade levels. Unlike other educational research, the California study obviously was generated by teachers and needed teacher input to be accomplished successfully. Further, at a time nationally when much emphasis is being placed on encouraging teachers to increase instructional time-on-task, the California study provides important insights into the nature of distractions which mitigate increasing time-on-task, as well as information about how teachers cope with such distractions.

> Criterion 2--Title: Does the title of the report(s) generate high enough teacher interest such that teachers will want to read it?

While the jury judged the title of the California study to be appealing and appropriate, the subtitle was thought to be possibly misleading. The title, "Coping with Classroom Distractions," clearly communicates that the study deals with what distractions occur in classrooms and how teachers cope with them. However, the subtitle, "Please Take A Number, I'll Be Right With You," seems to relay information concerning class size or lack of enough help for a teacher to assist students. About the subtitle, one jury member commented, "When I [saw] it, I thought, 'This is too cute!'" The jury recommended that only the main title be used in the future.

> Criterions 3--Format of presentation: To what extent does the format of the r and d reporting enable a teacher to make judgment about adoption/adaptation of the information and/or process?

In general, the jury found the reports to be interesting and the information important and clearly presented. However, concerns were raised about whether teachers realistically would devote the time necessary to reading the reports in their entirety, as presented. In particular, while the jury recognized that reporting followed standard, acceptable format in the research world, it was far too complex and detailed for the average classroom teacher's use. In the words of one of the jury members, "Most teachers don't bring an understanding of how to read all this stuff unless they have a knack for reading charts or graphs." The jury commented on each of the separate reports and made several specific recommendations on how the format might be made more useful for teachers.

Evolution of the Study. In the opinion of the jury, this report, while focusing on the sequence of the process used to conduct the r and d, resembled too closely the Formal Research Report. Thus, much of the information was found to be redundant. Further, while the expectation of one jury member was that it would articulate more the human dimensions of the interactions during the r and d process, she found instead that these dimensions were missing. In her words, "The [r and d] process was also outlined in the Formal Research Report so, if I'm going to read about the same process, there ought to be a different dimension [presented]."

Formal Research Report. While the jury liked the manner in which the information was presented in this report, and cited its completeness and clarity, concerns like those reported above for Criterion 3 were directed specifically to this report. In particular, the numerous charts and figures were seen to be more or less useful, depending on a teacher's familiarity with using such data displays. One jury member said, "I found the distraction profile and the coping profile the only two things [that were] usable. . .I got from the discussion the same things that were in [the rest of] the charts." However, another jury member commented, ". . .for certain things, it helps me to see it graphically. . .people have different needs when they're reading and, frankly, sometimes it helps to have one nice, neat chart to represent several pages of narrative." In reaching consensus, the jury made two recommendations. First, whenever possible, charts and figures should be placed in an appendix and a reference made to their location so that they do not interrupt the flow of the narrative. The jury felt that this would allow individual readers who wanted to do so to refer to the appendix for further information. Second, in order to be more useful for teachers, a consideration for such reports might be to locate conclusions and other relevant, useful information at the beginning of the report.

Case Studies. The case studies were judged to be "terrific" by the jury, containing useful information for teachers whose classrooms most closely resembled those for a given study. In addition, comparisons among classrooms depicted could be made. Thus, it was recommended that case studies be made available as part of such a report but, at the beginning of each, enough specific information be provided to allow a teacher to determine the degree of compatibility with his or her own situation. Such information cited by the jury, for instance, included a description of the kinds of students (age, sex, numbers and kinds of minorities represented, learning ability, etc.) and a description of the context of the school setting (urban, suburban, rural; ethnic composition of community and faculty; problems being experienced such as transiency of students, high ratio of learning disabled students, busing to achieve racial integration, etc.). In making this suggestion, however, the jury cautioned that the manner in which such information is presented may, in itself, determine whether a teacher reads the case study. A final recommendation is that each case study be prefaced with an abstract of the overall research so that the reader is afforded information quickly about how the study was conducted.

Training Report. The jury found that its comments for the Formal Research Report held true for the Training Report as well. In general, while it was well done, readable, and completely enough described, it was far too detailed for a teacher. A particular recommendation is that, as with the research report, general conclusions may be enough for a teacher. By locating these at the front of the report, they would be more easily accessible.

Sensitivity of language used. An important recommendation made by the jury addresses sensitivity to the use of language. Generally, although the reports use language which renders them clear and complete, there is one instance in the Formal Research Report which potentially is misleading.

On Page 106, the following statement is made: "While some of these variables can be 'controlled' in a given classroom (by age grading, tracking, ability grouping), most are beyond the control of the teacher and cannot be changed." The jury was unanimous in recommending that a report make clear when words such as "control" are used to refer to statistical measures, as contrasted with administrative strategies. It was the jury's opinion that racial segregation is frequently the result of the use of such devices as tracking and ability grouping. While jurors were certain this was not a recommendation being made by the California team, they wanted to underscore that such information might be misused if it is misinterpreted.

A second recommendation by the jury is that the inclusion on an IR&DT team of persons from minority groups would better insure that a sensitivity not only to language use but to cultural differences would result. While it was understood by jury members that the California IR&DT team was comprised of volunteers and that faculty members of minority backgrounds could have joined, nevertheless they recommend strongly that every effort be made in the future to encourage them to participate.

> Criterion 4--Importance of information: To what extent does the r and d provide important information about teaching and learning in classrooms?

The jury was unanimous in its praise for the importance and practicality of the California IR&DT team's r and d efforts, judging most of the information to be applicable to most classrooms. One jury member commented, "This study has teachers identify patterns of behavior which cause classroom distraction, brings teacher awareness of a variety of ways to cope with these, and allows teachers to realize positive aspects of coping." Another said, "I see it as useful in that it helps the teacher to describe in an increasing level of detail what, in fact, goes on in that room."

Criterion 5--Immediate payoff: What was the immediate payoff in conducting the r and d effort for teachers on the team? For other teachers involved?

Immediate payoff for teachers on the team, for those who participated as teachers in whose classrooms the research was conducted, and for those who received training was cited by the jury as being exemplary and outstanding. Teachers who were part of the California IR&DT team received the most benefit, but others benefited as well. All teachers, for instance, received monetary compensation for extra time spent outside classroom hours conducting the r and d. In the case of those teachers receiving training, a choice was offered of receiving pay or receiving college credit toward salary increases for participating in the pilot training effort.

Another payoff identified was the nature of the feedback teachers received. For all teachers, it was nonthreatening. As one jury member suggested, "You're working with your peer group and your peer group is more inclined to know how you feel about being observed." Another pointed out, "It's a constant give-and-take, and it's not an administrator sitting there writing up all the negative things he can find to use on your evaluation."

In addition, feedback was immediate and constant, affording teachers more easily to capitalize on the freshness of information about their classrooms. One juror cited this as "extremely important." The use of former teachers or substitute teachers as observers did not in itself guarantee accurate reporting of classroom interactions, but this was cited by the jury as being a contributing factor to the nonthreatening nature of being observed.

For all teachers an important immediate payoff was the information gained by them. One juror put it this way, "Being able to be aware of more things that happen in your classroom, and knowing what kinds of things are going on, is extremely useful. The other payoff, I think, is for students." Finally, the jury found that a primary value of teachers participating in conducting the r and d was their participation in analyzing the data. As one member of the jury said, "When some things recorded were wrong, the teachers immediately corrected them by saying, 'This isn't really what I was doing.'" The value of teachers involved in analyzing their own data added to the validity of the study.

> Criterion 6--Long-term payoff: What is the possible long-term payoff in conducting the r and d for teachers on the team? For other teachers involved?

The most valuable long-term payoff to teachers who participated on the California IR&DT team, in the opinion of the jury, is their increased power of observation. As one juror said, "The more skilled that teachers become as observers and documenters, then the more skilled they are to [enter into] dialogue with their administrators and with the wider community [about their teaching]." The jury felt this to be true to some degree for other teachers involved in the California IR&DT team's r and d, but the payoff was greater as teachers were more involved with the entire r and d process.

A second payoff that the jury suggested might have long-term effects is that, having inquired into the nature of distractions and coping with them, teachers are now able to substantiate that not all distractions are negative, nor is it necessary or possible to eliminate all of them. One member of the jury commented, "The aspect of this study that I love is that you should not shut off distractions. I think that is very important, because some administrators would want you to do that. That's not what the study is saying at all."

> Criterion 7--Levels of usefulness: For whom is the r and d intended to be most useful and how, i.e.,
>
> Criterion 7.a--Applicability: How applicable is the r and d for use in classrooms? In schools? In school districts? By others?

A unanimous judgment was rendered concerning applicability of the

California IR&DT team's r and d to other classrooms. The jury cited as particularly important that this application could be made at three increasing levels of complexity. In their experience with typical educational r and d efforts, jurors found this facet of the California IR&DT team's r and d to be unique and important.

First, after reading the study, jury members found themselves able to identify similar distractions in their own classrooms. One jury member said, "As a result of [reading] the study, I became more in tune with the kinds of distractions that might occur. And I became in tune with looking for the reasons!"

Second, the study identifies specific ideas for coping with distractions that teachers can use. As one juror enthusiastically stated, "When I get back there Monday, I'm going to be trying some of these techniques. There are some changes I see that could be made. I'm going to use this study!" In addition, jurors suggested that, while distractions identified were familiar in most classrooms, some coping strategies may be context specific, e.g., for use with only certain kinds of students or at certain grade levels.

Third, teachers can use the data collection methods developed and reported by the California IR&DT team to apply to their own classrooms, enabling them to categorize their own distractions and look at their own coping techniques. Further, experienced teachers, and those who have been involved with some research, may use these strategies to create new categories. Explained one member of the jury, "It's the ideas, the concepts that are in this work that assist me in making the appropriate kind of transformation. So, even though this [specific categories and coping techniques] isn't directly applicable, I can use their methods to find my own."

Criterion 7.b--Utility: Is there sufficient information such that r and d results can be put to use personally by teachers? In their classrooms? By an entire school or school district?

In the jury's opinion, the California study has a high degree of utility for teachers. One juror said, "If I have to document what in this study shows that the information here lends itself to making a decision about adoption or adaptation, I would have to say that it [was] the process itself. Teachers shared, exchanged, and pooled their resources, and this assisted them in making decisions about what in their classrooms they wanted to do something about. The process itself contributed to that level of learning or understanding." Another pointed out, "The concept was sufficient for me to begin to conjecture or to extend and elaborate in my own head what I could do with that. What I'm reading in this report is sufficiently similar conceptually that I can [use it] in my own situation."

Criterion 7.c--Timeliness: How timely is the r and d in terms of current needs and concerns of teachers for themselves? In their classrooms? In schools or school districts?

The timeliness of the California IR&DT team's r and d was cited by the jury for its relevance to concerns of the teachers on the team, to concerns of their school district as a whole, and to national concerns regarding increasing instructional time. In this regard, the jury commended the study for its unique validity.

Judgment of the Vermont IR&DT team's r and d. The same criteria for usefulness were applied to the Vermont IR&DT team's r and d report. Again, the jury was able to reach consensus, judging the Vermont effort against typical r and d efforts in the experiences of members of the jury. Their summary statements follow. As before, particularly relevant or clarifying statements of individual jury members are reported from transcripts of the meeting.

> Criterion 1--Topic: Is the topic of interest and relevant to solving problems or improving classroom practices as perceived by teachers at various grade levels?

In general, the jury judged the topic of the Vermont study as presented in their report to be irrelevant for most classroom teachers and condescending in the way the questions are asked. One juror said, "This is so 'researchy' that it's ridiculous! So many things they came up with already are explained by common sense. They didn't come up with anything new."

A question raised by the jury is the amount of influence exerted by the teachers on the Vermont IR&DT team in determining the topic. As a member of the jury phrased it, "The topic reveals a 'difference' in the teachers on the [Vermont] team and the teachers we know--real life teachers, and teachers we want to relate to."

> Criterion 2--Title: Does the title of the report(s) generate high enough teacher interest such that teachers will want to read it?

The jury found the title of the Vermont report to be cold, impersonal, and researcher-oriented. In fact, one jury member suggested that it "evokes hostility. When I read this [title] I get all the things they used to describe moods--angry, surly, moody, and more moody!" Another said, "The title doesn't tell me anything. It should be something like how a teacher's moods affect his or her teaching." Generally, jury members recommended a title which is more reflective of language teachers use.

> Criterion 3--Format of presentation: To what extent does the format of the r and d reporting enable a teacher to make judgment about adoption/adaptation of the information and/or the process?

Although the jury agreed that the format of the reporting met traditional research standards, jurors unanimously judged it to have very little of relevance to say to most classroom teachers. In making this judgment, the jury considered all three Vermont IR&DT team documents in their entirety. Generally, their criticisms reflected earlier concerns, e.g., "The reports not only 'talk down' to teachers, they don't say anything." "Maybe the reason this study seems so cold and impersonal is the way it's written up." "The reporting doesn't reflect any teacher input of importance, and [the report] was obviously written by someone other than the teachers."

In addition, they found the case studies to add little to the reporting and suggested that teachers probably would not read them. The jury raised the question of whether teachers in whose classrooms data had been collected were forced to participate. It found the nature of the case studies and the information in the Formal Research Report suggestive of this.

The Training Report, while reporting accurately what occurred during training, also reflected that much of what was included in the training had little or nothing to do with their research study, e.g., Project Teach. The jury judged it, too, to be of little use to practicing classroom teachers. An additional comment was that, as a result of their concerns, the jury wondered to what degree the report was "camouflage." In the words of one of the jury members, "It looked as though it was written because it was required, not because they had anything to say."

> Criterion 4--Importance of information: To what extent does the r and d provide information about teaching and learning in classrooms?

The jury found little information that it could recommend be shared with other teachers. One juror said, "The study contributed little to assisting teachers in being more knowledgeable and communicable about their classrooms and the kinds of learning that occur." Another said, "It (the r and d experience) might have been a good consciousness-raising exercise about their (the teachers on the team) own moods, but it doesn't contribute anything new."

> Criterion 5--Immediate payoff: What was the immediate payoff in conducting the r and d for teachers on the team? For other teachers involved?

> Criterion 6--Long-term payoff: What is the possible long-term payoff in conducting the r and d for teachers on the team? For other teachers involved?

A decision was made by the jury to combine these criteria in addressing its judgment of the Vermont IR&DT team's r and d efforts. Generally, the jury found little evidence of short-term payoff--either for teachers on the Vermont IR&DT team, for those who participated as subjects in the research, or for those who received training. Subsequently, it questioned the possibility of any long-term payoff.

Specifically, the jurors cited four major concerns. First was the overwhelming amount of time devoted by all teachers who participated in what they judged to be a study that produced seemingly little new information or insights. Their concern included the three teachers who were members of the Vermont IR&DT team, the nine teachers in whose classroom data were collected, and the six teachers who were trained. In light of their judgment of the usefulness of the study, jurors described this as "wasted time."

Growing from this was their second concern. The jury commented, given that parity in decision-making is a feature of IR&DT, the Vermont study as reported reflected little teacher involvement. As one juror put it, "[Teachers] were supposed to be part of a team that agreed upon this topic. I can't believe that teachers would agree to such a 'researchy' topic." As well, the jury agreed that such teacher input to decisions made appeared to be absent throughout the process of conducting the Vermont IR&DT team's r and d.

This further was demonstrated by their third concern. Jurors felt that the entire reporting as written was condescending to teachers. Although several passages were cited, one particularly illustrative was the apparent inference on Page 104 in the Formal Research Report that only the trainer/developer "could tell what was right":

> After all, trainers have to leave the scene of battle sooner or later. The teachers remain to fend for themselves. The self-support activities initiated by staff development people seem logically possible once teachers learn how to do it. Teachers would then be acknowledged experts on what happens in their classrooms.

About this particular passage, one juror exclaimed, "That really upset me!"

The final comment registered by the jury regarding payoff concerned both the few numbers of teachers (6) receiving training and the lack of options in rewarding their participation. Only three hours of university credit were offered; whereas, in the experiences of the jury members, other options such as extra pay or credit toward salary increases are offered. In their opinion, more options should have been made available to those receiving training.

> Criterion 7--Levels of usefulness: For whom is the r and d intended to be most useful and how, i.e.,
>
> Criterion 7.a--Applicability: How applicable is the r and d for use in classrooms? In schools? In school districts? By others?

The jury questioned the applicability of the Vermont IR&DT team's r and d, for other teachers in Vermont as well as elsewhere in the nation. Its position was summarized by this juror's statement: "I can't believe that this study was something that is needed by all the teachers in Vermont. Is it that different from every place else that I know?"

Another comment centered on the jury's opinion that the study did not present information that would be helpful to teachers. An example was cited from Page 95 of the Formal Research Report:

> It can be suggested, then, that mood was identifiable, that it seemed to be related to events in people's lives that occur in school and out of school, that mood tended to drop for some teachers as they approach difficult times for them during the day, that mood seemed to be related to several supportive instructional behaviors, and that mood shifts seemed to be more frequent when teacher's general mood was low.

About this passage, one juror stated, "Well, anybody knows that! That's common sense! "It doesn't teach you anything."

A third difficulty the jury saw in applying the information was the nature of its presentation in the reporting. Jurors found that the report lacked credibility and never focused on possible solutions or suggestions for teachers to put into use. Summarizing their concerns, one juror said, "This study only hints, every now and then, that there is something, but it never gets to the point and says it."

> Criterior 7.b--Utility: Is there sufficient information such that r and d results can be put to use personally by teachers? In their classrooms? By an entire school or school district?

As with its applicability, the utility of the Vermont IR&DT team's r and d was questioned as it was reported. One juror said, "It just seemed that they really didn't care one way or the other about how teachers might apply this in their classrooms. All they cared about was getting the research study printed." Another juror said, "This study could have been done by the researcher without teacher participation."

> Criterion 7.c--Timeliness: How timely is the r and d in terms of current needs and concerns of teachers for themselves? In their classrooms? In schools or school districts?

In the opinion of the jury, the Vermont IR&DT team's r and d does not present information that meets the needs and concerns of classroom teachers.

Recommendations. The jury concluded its meeting by considering several recommendations in regard to IR&DT in general. These grew from their experience with reading the reports from the two teams and from interacting as a jury. Thus, they are reflective of the process and are not directed at a particular team's efforts. Their recommendations are:

1. Funding sources should consider alternative ways to fund research. The jury noted that currently research is funded using the Request for Proposal (RFP) procedure, whereby topics to be researched are determined

a priori and proposals to conduct research into these questions invited. While the jury recognized the need to conduct business in this way, they also suggested that funding sources consider alternative research strategies like IR&DT that allow teacher input in determining the questions to be researched. One juror stated, "Somebody needs to be made to understand that teachers won't accept or utilize something that is forced, or done by somebody else." The jury suggested that research conducted with teacher participation centering on their concerns would be considered by teachers to be far more valuable.

2. The IR&DT strategy should be considered by other researchers. In recommending IR&DT to other researchers, the jury composed the following statement:

> The overall format of the IR&DT method is exciting, meaningful and, above all, puts "boring-to-read" and "difficult-to-understand" research into a mode that allows teachers to become an integral part of the entire process. It is time-consuming, but the end justifies the means and, therefore, makes it extremely worthwhile. How refreshing it is to realize that, at last, the ivory towered, white, middle-class researchers (mostly made up of professors) will be focusing their research tools on the classroom and will be working in parity with classroom teachers. This is the only way we'd even begin to consider the contents of a research study--dealing with and in classroom environments.

3. Research teams--IR&DT and others--should have the participation and representation of minority teachers. As suggester earlier in its report, the jury stated that the inclusion on r and d teams of teachers representing minority backgrounds will better insure sensitivity to multicultural concerns.

4. Research should be presented to teachers in a more readable fashion. The jury found the reports from both teams to be overwhelming in terms of length by itself, and recommended that strategies for synthesizing findings and presenting them in more useful forms to teachers would be helpful.

Staff Developers. A second constituency for whom the IR&DT strategy has potential implications is that group of persons referred to as staff developers. For the purpose of organizing this jury, the term, staff developer, refers to those whose professional activities consist of developing and implementing training programs for practicing classroom teachers. Usually, they are school district employees, whether at the building level, district office level, or working for an intermediate educational agency like a county schools' office. For this jury, an additional perspective was added, that of the brokering agent. Such a person typically works in rural areas where intermediate educational agencies either do not exist or service a vast area. Sometimes, a member of an institution of higher education fulfills this role, but more frequently professional teachers' organizations assume this responsibility. Because one of the implementation sites was located in such a rural area, it was considered important to include on the jury the perspectives of a brokering agent who works in a similar setting.

As with other juries, persons for the staff developer jury looking at usefulness of the teams' r and d were nominated by various constituent sources. They were selected to reflect the perspectives enumerated above as well as for usual factors like urbanness and ruralness, size and level of educational agency, number of persons for whom staff development responsibilities include, etcetera. The jury met in Chicago on Tuesday, February 27, 1979. Their judgment of the two IR&DT teams' r and d follows:

Members of the jury. Three people comprised the jury. Two were female and one was male. Constituencies represented included the director of a large, urban school district staff development program, the principal in the role of staff developer at an elementary school in a suburban area immediately adjacent to a large urban center, and a brokering agent for organizing staff development programs for teachers in a large, rural area.

The first juror is Associate Superintendent, Curriculum and Instruction Services for the public schools of Chicago, Illinois. In this role she is responsible for all of the staff development programs in the school district, and supervises over 200 members of her staff in serving the needs of the district's 30,000 teachers. Among her professional educational experiences, she includes 14 years of teaching at both the elementary and secondary levels, guidance counseling, serving as a principal, and being Area Associate Superintendent before assuming her current duties. All of the above experiences have been in the Chicago schools, but her interests and expertise have her also serving in various capacities on national committees and boards. She frequently is called upon to assist other urban settings with addressing problems which, in her opinion, Chicago has successfully resolved. Immensely proud of her city, she stated, "In relationship to some of the other cities I've been to, Chicago has coped with the social revolution and come out in reasonably good shape."

Possibilities for the elementary school principal to serve in the role of staff developer is a major interest of the second juror. On leave as a principal from the Newton, Massachusetts school system, he has spent the past two years completing a book on the inside perspectives of being a principal. It is his expertise as a principal that has led to national recognizance, resulting in numerous speeches, journal articles and contributions to books. He was nominated to serve on the jury by the National Elementary School Principals' Association. Among his professional experiences besides being a principal he includes five years of classroom teaching at grades 4, 5, and 6, various research study grants, and a lectureship at the Harvard Graduate School of Education where he is now serving.

In her role as Instruction and Professional Development Specialist for the Kentucky Education Association, the third juror is responsible for designing staff development programs for the member teachers in the state. Because much of the state is rural, this often means brokering with an institution of higher education to provide course work that is designed to meet the specific needs of her client teachers. Working within the constraints of a meager budget provides great challenges for this effort. A former teacher at both junior and senior high school levels for eighteen years, she has served in her current position since 1970. Among her personal accomplishments she counts an award as Kentucky Teacher of the Year (1966) and past president of the KEA. In addition, she has been a long-time member of the Board of Directors of CEMREL, Inc., a federally-funded regional educational laboratory.

Criteria. Six criteria were developed by the jury for judging the usefulness of educational r and d. In developing their criteria, jurors had in mind as their constituent group classroom teachers, principals in charge of staff development activities at the building level, and staff developers at a school district, intermediate educational agency level, or serving a specific group of teachers. As well, because they were evaluating both the research and development/training for each team, and because these had been generated as part of an r and d process, the jurors determined to extend their judgments to include both r and d content and process. Criteria are presented below.

1. Importance of the topic: How generalizable is the topic to teachers, schools, school districts in the nation, i.e., would others find it to be important to their worlds? What spinoff possibilities does the r and d present--both from the findings as well as the r and d process--for utilization of other-than-intended outcomes? Is the r and d program flexible such that unexpected findings can occur?
2. Presentation of reports and data: Does the format of the reporting satisfy a diversity of interests and allow for easy reading by a diverse audience? Is all information included essential to understanding? Has the report

included appropriate reviews of literature both for research and for training in relation to the topic? Is the language used for reporting clear and understandable and free of jargon aimed at a single audience? Are data presented such that they are understandable and interpretable? Are data in a state of readiness for use by classroom teachers and staff developers?

3. Conceptualization of the problem: Is the research question immediately useful to teachers and staff developers? Is the r and d applicable to diverse settings? To what degree is the r and d manageable? Does the r and d assist teachers to conceptualize instructional problems and design appropriate teacher behaviors to solve these?

4. R and d process: Does the r and d process promote a non-threatening arena in which teachers and others can work productively? To what degree does the r and d process consciously insure maintenance of the natural setting of the classroom? Is there teacher and staff developer involvement in the r and d process, and does such involvement include parity in roles and decision making re all facets of the r and d process? To what degree does the r and d process encourage shared knowledge among teachers, staff developers, and researchers to inform the r and d? Does the r and d process nurture cooperation among the participants such that jealousy is avoided?

5. Outcomes for participants: To what degree is the r and d--both content and process--transferable to other people, other sites, other times? What is the potential impact and duration of effect on participants in the r and d? What opportunities does the r and d--both content and process--provide for immediate feedback to participants?

6. Cost effectiveness and transportability of the r and d content and process: What human resources are necessary to implement either the r and d content or process? What time commitment is necessary to the various participants for implementation? How effective is the r and d process in accommodating institutional constraints? What extra costs to an institution might be incurred, and what trade-offs are made possible? What "engineering" requirements are necessary to successful transportability of the r and d process?

Application of criteria: Criteria were applied independently to the r and d of each of the two teams. In order to do so, jurors read both the research and training/development reports for each team. In addition, it is important to note that the jury determined to include for its judgment the r and d process as well as the content or outcomes of the r and d. It did so for two reasons. First, each juror brought to his or her task significant experience with conducting r and d. A common concern growing from their collective experiences was that research often is divorced from training/development efforts, and teachers and staff developers are excluded almost entirely from the r and d process itself. Thus, jurors found the process of conducting r and d to be as important as the specific outcomes and, in the case of IR&DT, to have significant implications for the educational community in general. In relation to this, one juror commented, "From my point of view, the usefulness here lies not [only] in the information and the summaries, but [also] in involving teachers [in conducting r and d]." Another agreed, "[Much] of the value lies in the engagement of the teachers in the research." Second, the documents from each team contain sufficient information about the process each team went through in conducting its r and d such that jurors felt they could make a comparison with what they perceived to be usual r and d practices.

To arrive at their judgments, jurors considered each team's r and d reports separately and compared each with what they considered to be typical of educational r and d in their experiences. The jury used a five-place judgment scale to gauge their judgments:

- Much more useful than typical educational r and d
- Somewhat more useful than typical educational r and d
- As useful as the norm for educational r and d
- Somewhat less useful than typical educational r and d
- Much less useful than typical educational r and d.

Their judgment for each team's r and d in relation to each of the six criteria established for usefulness appears below. It should be noted that no attempt was made by the jury to assign differential weighting to the criteria. Thus, no single criterion should be considered to be more important than others. In addition, for several criteria jurors did not reach consensus, and requested that their dissenting judgments be recorded and explained. These appear in the discussion following each criterion.

Judgment of the California IR&DT team's r and d. The jury reached consensus on all but two of the criteria developed for usefulness of the r and d in their evaluation of the California IR&DT team's efforts. On one of these occasions the dissenting opinion was close to that of the other two jurors, and on the second occasion it was quite disparate. Reasons for these judgments appear as part of the discussion for each criterion below. Included in each discussion are particularly relevant or clarifying statements made by jurors during their deliberation.

> Criterion 1--Importance of the topic: How generalizable is the topic to teachers, schools, school districts in the nation, i.e., would others find it to be important to their worlds? What spin-off possibilities does the r and d present--both from the findings as well as the r and d process--for utilization of other-than-intended outcomes? Is the r and d program flexible such that unexpected findings can occur?
>
> - Overall judgment: Much more useful than typical educational r and d.

Jurors were unanimous in their appraisal of the importance of the California IR&DT team's topic for their r and d. Said one juror, "I can't think of a school that doesn't have problems with interruptions and distractions." Another commented, "As a classroom management issue, this (the topic) is probably the highest priority for most teachers. Anybody else can tell you that until you have some control over the classroom, there won't be any teaching or learning going on." In particular, jurors liked the potential that the training program provided for participants to develop individual insights about their own classroom disruptions and coping techniques, and pointed to feedback from participants included in the report as evidence that this had occurred.

> Criterion 2--Presentation of reports and data: Does the format of the reporting satisfy a diversity of interests and allow for easy reading by a diverse audience? Is all information included essential to understanding? Has the report included appropriate reviews of literature both for research and for training in relation to the topic? Is the language used for reporting clear and understandable and free of jargon aimed at a single audience? Are data presented such that they are understandable and interpretable? Are data in a state of readiness for use by classroom teachers and staff developers?
>
> - Overall judgment: Much more useful than typical educational r and d.

As with the topic, jurors found the California IR&DT team's reporting and data presentation to be exemplary. Data were clearly presented and, in their opinion, immediately useful for teachers. While jurors found the sheer length and number of reports to be exhausting, they recognized the need for each. In particular, they found the case studies of teachers to be relevant for other teachers, and cited the section of each case study which reported teachers' insights as being very valuable. A final insight in relation to this criterion was that jurors thought teachers and staff developers, upon reading the reports, could make immediate use of the information by applying categories for distractions and coping techniques either to their own classrooms or for purposes of developing training for others.

> Criterion 3--Conceptualization of the problem: Is the research question immediately useful to teachers and staff developers? Is the r and d applicable to diverse settings? To what degree is the r and d manageable? Does the r and d assist teachers to conceptualize instructional problems and design appropriate teacher behaviors to solve these?
>
> - Overall judgment: Much more useful than typical educational r and d.

For this criterion, the jury found the California IR&DT team's r and d to be much more useful than is typical of educational r and d. Recognizing that a desired result of the r and d is having teachers learn to cope with distractions, a juror stated, "In any kind of setting, reducing distractions is seen as [being] positive. Even in an open classroom setting, teachers want children to become responsible for their own behavior. A child doesn't have to interrupt a teacher when he or she is teaching reading, and the sooner [this is] learned, the better." Another juror commented, "I looked at it another way. Sometimes distractions, or the distraction, are [a part of] the whole learning process. Learn to minimize the time taken with distraction through your coping techniques, and this leaves you more time to take care of other things, whether they are distractions or otherwise."

A dissenting opinion by one juror centered on the applicability to diverse settings of the problem as conceptualized. For examples, (s)he cited three reasons. The first concerned the teacher-centeredness of the research. About this, (s)he said, "I really did think this (research) was confined to usefulness in classrooms that are more teacher-directed. I find the approach here somewhat limited for application to a pupil-centered classroom." A second problem was the tendency to think of distractions as negative. In commenting, (s)he stated, "Often, what takes a teacher off task is what keeps a student on task, and I'm more interested in the quality of a child's time-on-task than I am with teachers' time-on-task. Students seeking clarification on assignments and student-generated questions are classified here as taking the teacher off task. But are they necessarily negative distractions?" The third concern questioned whether the r and d as conceptualized would have impact at other than the elementary school classroom level. It should be noted, however, that except for these qualifications, specifically in regard to applicability to diverse settings of the California r and d, this juror agreed with the others in the rating for the overall criterion.

A summary of the jury's deliberations on this point was made by this juror who said, "[This study] is designed to show the teacher how to cope in terms of minimizing the discontinuity of a lesson and the time involved [to do this]. To get the teacher to develop more parsimonious coping techniques is a valuable objective."

> Criterion 4--R and d process: Does the r and d process promote a nonthreatening arena in which teachers and others can work productively? To what degree does the r and d process consciously insure maintenance of the natural setting of the classroom? Is there teacher and staff developer involvement in the r and d process, and does such involvement include parity in roles and decision making re all facets of the r and d process? To what degree does the r and d process encourage shared knowledge among teachers, staff developers, and researchers to inform the r and d? Does the r and d process nurture cooperation among the participants such that jealousy is avoided?
>
> - Overall judgment: Much more useful than typical educational r and d.

In discussing this criterion for the California IR&DT team's r and d, jurors focused on four major elements of the process. These were the nature and quality of involvement of teachers and staff developers in the r and d process, the resolution of parity as an issue on the team, the development of case studies of their own classrooms by teachers, and the lessened involvement of teachers in the actual training program implemented.

Jurors recognized that involvement of teachers and staff developers in the conducting of r and d is not a usual practice. About this, one juror said, "We don't know any other research efforts where someone asks teachers to be participants. I haven't come across any, and I've been involved in a lot of them. It might be that [a teacher] is a member of the team for some partial, limited input, but when it comes to reporting the research results, the researcher does it. When it comes to training people on how to conduct it, the staff developer does it. Here we had everybody involved." Because involvement of teachers on the California IR&DT team's r and d project was voluntary, jurors perceived the resultant situation to be one in which teachers found the experience to be nonthreatening. "The nonthreatening part," said a juror, "was--having been involved in the designing of the research and choosing the observation forms, and choosing who will be your observers--the data collection process itself was not as threatening as it would be in most instances." Agreed another juror, "That was good. It was good from the standpoints of cooperation and commitment."

Parity was defined by this juror who said, "I think parity includes the use of the person in terms of his or her area of expertise. I would expect the researcher ultimately to defer to the teachers for something to be operational in the classroom. I would expect the teachers to back off in terms of the research design. In other words, I would want within that definition of parity some respect for expertise." Other jurors agreed, and praised the California IR&DT team for apparently having achieved parity in conducting its r and d, especially in relation to dividing up the tasks. "The distribution of responsibilities and expertise is much better than average," stated another juror. The r and d process utilized by California was characterized as "a three-ring circus. Everyone has his or her ring, and sometimes the rings overlap. But there is a discrete expertise in each of these arenas, [so] I wouldn't expect a staff developer to take over a teacher's classroom, or the teacher to take over the research."

An unusual aspect of the California IR&DT team's r and d was the development by teachers on the team of their own case studies in relation to the research question. Jurors complimented the California team for using this strategy. Said one juror, "What was valuable to me about the case studies was that teachers conceptualized their own instruction." A second juror pointed to the insights section in each case study, and said, "I really miss that in other research reports." Jurors understood that it was the team's decision that teachers spend their time over the summer analyzing their data and writing their case studies. Because the training/development also was being designed and implemented at this time, there was conjecture on the jury as to which of these two experiences would have been more valuable.

On this element of California's r and d process--the involvement of teachers in the training program--the jury was divided. While all jurors agreed that the process had allowed for members of California's IR&DT team to divide the tasks among them, and that many of the tasks had to be accomplished concurrently, nevertheless one juror was disappointed that there was very little involvement of teachers in the training. "Teachers were capable, and this [involvement as trainers] was a great learning moment for them," (s)he observed. "There's tremendous potential for a teacher to grow when teachers teach other teachers. I think it would have been very valuable for those teachers. Here was a marvelous learning [opportunity] that was lost." Another juror questioned, "These were concurrent activities, and teachers had not gone through the whole process yet so [maybe] they weren't ready for that phase [teaching others]. How much could they do? Teach their class, go through the research project and then do staff development at the same time?" While the other two jurors agreed that participation in training others might be valuable, they cautioned that it might have to wait until later as an example of spinoff from the total r and d effort. A final caution was registered by one juror who said, "I do believe there's a valid arena for a staff developer, and there are some kinds of staff development that are better done by staff developers than by teachers. I don't go along with romanticizing the teacher as being able to do everything. There are some things that teachers can do better, but I have [also] been in situations where the frustration level was so high teachers [demanded], 'We want some expertise brought in. We want someone else to come in and do it (training).'"

Criterion 5--Outcomes for participants: To what degree is the r and d--both content and process--transferable to other people, other sites, other times? What is the potential impact and duration of effect on participants in the r and d? What opportunities does the r and d--both content and process--provide for immediate feedback to participants?

- Overall judgment: Much more useful than typical educational r and d.

The California IR&DT team's r and d was deemed by the jury to be much more transferable in terms both of the content and process than typical educational r and d. In addition, jurors found that feedback opportunities built into both the research and the training program were exemplary. Examples for research were the involvement of all teachers in analyzing their data and writing their case studies. About this process, one juror said, "I particularly like the feedback. I've been involved in a number of research studies where the teachers who were the data sources never found out what [the researchers] found out." For training, jurors cited the constant feedback process used during training sessions when participants analyzed their printouts. As well, using the buddy system, wherein two teachers in the same building learned to observe each other in relation to disruptions and coping strategies, was seen to have potential for long-term effects.

Of interest here was the distinction made by the jury of the quality and longevity of impact upon the three groups of teacher participants in the California r and d. It will be recalled that teachers who volunteered to serve on the IR&DT team and who participated in all decision making and activities for the duration of the project were referred to in the California IR&DT team's reports as Tier 1 teachers. Teachers who volunteered as the sample for purpose of serving as data sources, but who also participated in analyzing their data and contributing to the teacher case studies, were called Tier 2 teachers. Finally, teachers who participated only in training were Tier 3 teachers. In the opinion of the jury, the greater impact was upon the Tier 1 teachers and decreased proportionately both in quality and potential longevity of effect for Tier 2 and 3 teachers. "I believe strongly in the generalization that the greater the involvement, the greater the impact, and the longer the impact on behavior to change," summarized one juror. Another said, "I had the distinct feeling that Level 1 had far greater positive outcomes than Level 2, and Level 2 more than Level 3. They were worlds apart in what they got out of their experiences." Because this configuration of teachers for purposes of conducting r and d is not usually found in educational r and d, jurors felt it important to make this qualifying statement. Nevertheless, they also recommended that such use of similar configurations of teachers would strengthen educational r and d efforts generally.

> Criterion 6--Cost effectiveness and transportability of the r and d content and process: What human resources are necessary to implement either the r and d content or process? What time commitment is necessary to the various participants for implementation? How effective is the r and d process in accommodating institutional constraints? What extra costs to an institution might be incurred, and what trade-offs are made possible? What "engineering" requirements are necessary to successful transportability of the r and d process?
>
> - Overall judgment: Much more useful than typical educational r and d.

In reflecting on this criterion for the California IR&DT team's r and d, jurors recognized that the process itself was, in the words of a juror, "More expensive and more complicated." Another juror compared the California r and d with other similar efforts, stating, "Other things are cheaper and easier to implement because they're not done with as much rigor. Some of it is so simplistic it's relatively easy to do." However, the jury did not want inferred that cost was a negative factor. Stated one juror, "It may well be worth it because you may get 'more bang for the buck' when you are all through."

Another said, "It might really do what it purports to do and that is create teacher awareness and behavioral change. Some of the others (other r and d efforts) claim to deliver this just by asking teachers to read findings."

A final facet of the jury's deliberations is relevant here. When they were through with judging the California IR&DT team's r and d reports, jurors asked for and received an approximate dollar amount for the cost of the California project. In response, one juror said, "I would say, given those figures, the cost effectiveness is even more dramatic." Jurors were unanimous in their admiration for the work the California IR&DT team had conducted in a manner which they judged to be far more cost effective than merely surface knowledge of the IR&DT strategy might lead one to surmise.

This comprises the judgments made by the jury for the California IR&DT team's r and d reports. Following are the judgments made for the r and d from the second site, Vermont.

Judgment of the Vermont IR&DT team's r and d. For only two of the six criteria for evaluating the usefulness of the Vermont IR&DT team's r and d did the jury reach consensus, but the remaining four judgments were close. Particularly relevant and clarifying statements made by jurors during deliberation are included in discussions below for each of the six criteria.

> Criterion 1--Importance of the topic: How generalizable is the topic to teachers, schools, school districts in the nation, i.e., would others find it to be important to their worlds? What spin-off possibilities does the r and d present--both from the findings as well as the r and d process--for utilization of other-than-intended outcomes? Is the r and d program flexible such that unexpected findings can occur?
>
> - Overall judgment: Much more useful than typical educational r and d (2 jurors); Somewhat more useful than typical educational r and d (1 juror).

Jurors began their deliberation of the Vermont IR&DT team's r and d by reviewing criteria. In particular, agreement was reaffirmed among themselves that criteria applied both to the r and d content and to the process. This was an important consideration particularly useful for their judgment of this first criterion, for while jurors individually might have had concerns about the nature of the topic, they were unanimous in their judgment that the process utilized by the Vermont IR&DT team in conducting their r and d was at least somewhat more useful than typical of educational r and d.

Particularly for teachers in other places in the nation who, like the Vermont teachers, live isolated from large, urban, metropolitan centers, the jury found the Vermont IR&DT team's r and d to be relevant. Stated one juror, "[In educational r and d] we talk about [attending to] the setting of the classroom and the characteristics of the classroom and community involvement and all, but what attention have we given to the setting of the teachers and how that rubs off on the whole? If you live [in places like Vermont] you have a different set of expectations than you do if you live in an urban area." Thus, jurors were agreed that the r and d process, and to a limited extent the topic, was reasonably generalizable to a significant population of other teachers and staff developers.

Spinoff potentials also were seen to be probable. "I have situations where it's almost a mental block as far as teachers participating in anything," said one juror. "If anything, this model (IR&DT strategy) is valuable because it demonstrates how you can go the extra mile."

The dissenting opinion made by one juror was based on the complicated manner in which the topic was presented, at least in the reports. For most teachers in most places, (s)he contended that the topic selected by the Vermont IR&DT team probably would not be of much interest either as research or for purposes of training. In addition, (s)he cited one serendipitous clue that was not followed. "When they spent time in teachers' classrooms during [the teaching of] reading and then during [the teaching of] mathematics," (s)he said, "and mathematics seemed to be the most difficult time for most of those teachers, [they didn't pursue] what I thought might have been very fruitful." However, (s)he agreed that in comparison with typical educational r and d, the Vermont effort--and particularly in light of the process used--was somewhat more useful.

> Criterion 2--Presentation of reports and data: Does the format of the reporting satisfy a diversity of interests and allow for easy reading by a diverse audience? Is all information included essential to understanding? Has the report included appropriate reviews of literature both for research and for training in relation to the topic? Is the language used for reporting clear and understandable and free of jargon aimed at a single audience? Are data presented such that they are understandable and interpretable? Are data in a state of readiness for use by classroom teachers and staff developers?
>
> - Overall judgment: Much more useful than typical educational r and d (2 jurors); Somewhat more useful than typical educational r and d (1 juror).

Jurors disagreed only in terms of degree of judgment for this criterion, judging the Vermont IR&DT team's r and d to be at least somewhat more useful than that which is typical for educational r and d. In arriving at their decision, jurors examined and treated separately the research and training reports.

For the research, jurors found that although presentation of data and reporting followed standard research procedures in terms of format, the additional ingredient of teacher participation made viable for them an otherwise "dry" piece of research. In relation to this latter point, one juror stated, "The long presentation of data on the list (six questions) I felt got pretty tedious when repeated for each teacher. It was turgid and redundant."

Two specific recommendations were made that might have strengthened the reporting. One juror said, "What I was looking for was a linear listing in terms of priority of effectiveness of the SIBs (Supportive Instructional

Behaviors). Such desirable teaching behaviors are good to put in the hands of teachers who can say, 'Well, here's something I may want to try.'" Placing SIBs on such a list was one way this juror believed would ensure that teachers would use them. However, a second juror cautioned, "Teaching behaviors can be either positive or negative [depending upon] a given situation." Thus, such a list wisely might be accompanied by a cautionary note. Another suggestion also was registered by this juror who said, "What I missed were teacher documents (aspects of the research written by teachers on the team specifically for teacher consumption) to give it a kind of validity." However, the inclusion of case studies of the nine teachers in the research sample was recognized as being important. Jurors found this inclusion enhanced the report by making it more complete, and observed that such rich descriptions of phenomena under study frequently are missing from research reports.

The training report, on the other hand, clearly depicted what objectives, measures, and strategies were used, in the opinion of the jury. Jurors pointed to feedback given the instructors by participants as evidence that these had been accomplished successfully.

> Criterion 3--Conceptualization of the problem: Is the research question immediately useful to teachers and staff developers? Is the r and d applicable to diverse settings? To what degree is the r and d manageable? Does the r and d assist teachers to conceptualize instructional problems and design appropriate teacher behaviors to solve these?
>
> - Overall judgment: Somewhat more useful than typical educational r and d.

In judging the Vermont IR&DT team's r and d to be somewhat more useful than that typical in education, jurors reaffirmed the position they took for Criterion 1 above. In that large numbers of teachers, like those on the Vermont team, are located in isolation from large, urban, metropolitan centers, the jury found the research question to be probably useful for many of them.

While some question about applicability to diverse settings was raised, jurors noted that teachers generally believe that there is a linkage between how they feel, i.e., the mood they are in, and how they behave, i.e., what supportive instructional behavior (SIB) they might be using. Thus, the categorization, identification and description of the SIBs for each of the nine teachers was considered to be potentially useful to teachers and teacher educators for conceptualizing instruction. As before, the jury used feedback from participants in the Vermont IR&DT team's training program as evidence that this might be so.

> Criterion 4--R and d process: Does the r and d process promote a nonthreatening arena in which teachers and others can work productively? To what degree does the r and d process consciously insure maintenance of the natural setting of the classroom? Is there teacher and staff developer involvement in the r and d process, and does such involvement include parity in roles and decision making re all facets of the r and d process? To what degree does the r and d process encourage shared knowledge among teachers, staff developers, and researchers to inform the r and d? Does the r and d process nurture cooperation among the participants such that jealousy is avoided?
>
> - Overall judgment: Much more useful than typical educational r and d.

The process used by the Vermont IR&DT team in conducting its r and d was judged by the jury to be much more useful than that utilized in typical educational r and d. High teacher participation in decision making concerning the various stages of the process was seen by jurors to be particularly useful in assuring validity of the r and d. "I have situations where there's almost a mental block on the part of teachers participating in anything," stated a juror, "but if anything, this (IR&DT strategy) is valuable because it demonstrates how you successfully can [involve] teachers, regardless of their level of commitment and participation." Said another, "I think probably greater effort was expended in the process, which was true to the design and probably was a first venture [in involvement] for them in anything [of this nature]." A third juror's comment focused on the nonthreatening aspects of the project, adding that "It didn't disrupt the natural setting, and they (the teachers) were involved in the decisions."

One insight that emerged during discussion was that the research report reflected heavy researcher input and little teacher involvement. "It was almost as though teachers had abandoned the researcher," reflected a juror. Another said, however, "Well, they had every opportunity to make a [different] decision than they [apparently] did," and was supported by this juror's comment: "You mean, they made the decision (to allow the researcher to write the reports)." On the other hand, a juror commented that, in similar circumstances in a research endeavor, the researcher might have abandoned the research given the direction it was going. "Instead, this (IR&DT) shows how you can go 'the extra mile.' You don't abandon them (the teachers) because you still could end up doing something worthwhile." The fact that the training program produced positive results convinced this juror that the researcher's perseverance paid off.

> Criterion 5--Outcomes for participants: To what degree is the r and d--both content and process--transferable to other people, other sites, other times? What is the potential impact and duration of effect on participants in the r and d? What opportunities does the r and d--both content and process--provide for immediate feedback to participants?
>
> - Overall judgment: Much more useful than typical educational r and d (2 jurors); Somewhat more useful than typical educational r and d (1 juror).

The split in judgment of jurors for the Vermont IR&DT team's r and d in terms of this criterion was as before a matter of degree. One juror distinguished among the outcomes for the various teacher participants in the entire r and d process for Vermont, and judged the experience to be more fulfilling for teachers on the team than for either research subjects or training pariticipants. About those who were not members of the team, (s)he said, "Most of them were really just pawns in this whole business. They were objects that people walked around and talked to a little bit to use, to get some numbers." Still, noting that most research subjects are treated similarly, while at least teachers on the Vermont IR&DT team participated in decision making about the entire r and d process, (s)he judged the effects to have been greater than is typical for educational r and d projects.

A philosophical position taken by the jury was summarized thusly. "I believe that the outcomes are directly related to the commitment," said a juror. "It's no fault of the design. Everything was structured [to see] that they got maximum outcomes, and they were certainly committed." Another juror said, "I believe [even] that teacher who said she didn't really learn anything (feedback re training program) probably learned more than she knew. Saying this is a sort of bragging." Jurors felt strongly that feedback to participants in training was apparent, and certainly the training instructors received adequate feedback as well.

Process in particular was judged to be transferable and useful to teachers, teacher educators, and staff developers in other settings. Said a juror, "If this didn't make it, I wonder what chance does any research have, then? At least this process [got the] teachers involved." In comparison to other educational r and d efforts in their experiences, the other two jurors agreed emphatically.

> Criterion 6--Cost effectiveness and transportability of the r and d content and process: What human resources are necessary to implement either the r and d content or process? What time commitment is necessary to the various participants for implementation? How effective is the r and d process in accommodating institutional constraints? What extra costs to an institution might be incurred, and what trade-offs are made possible? What "engineering" requirements are necessary to successful transportability of the r and d process?

- Overall judgment: Much more useful than typical educational r and d (2 jurors); Somewhat more useful than typical educational r and d (1 juror).

For this criterion, the jurors once again registered a split judgment in regards to the Vermont IR&DT team's r and d outcomes. It will be recalled that when the jury arrived at judgment for this criterion for the California IR&DT team, jurors requested and were given approximate costs for implementation of the project. Jurors did so for the Vermont IR&DT team as well. As before, jusgment was made in relation to specific educational r and d users.

For all groups, the jury found the cost effectiveness and transportability of the Vermont IR&DT team's r and d to be no particular problem. Depending on their receptiveness philosophically, all constituent groups were believed to be able to make use of the outcomes with little more cost than those that might be incurred for typical educational r and d. While it was believed that cost effectiveness might be highest for other collaborative r and d efforts inasmuch as they would be engaged in producing similar results, nevertheless cost was not perceived to be a delimiting factor.

Essentially, the juror who reported the lowest rating did so on the basis of perceived effect upon participants, stating, "The cost is up [compared to typical educational r and d] and the outcomes for participants, as I see it, is down." Thus, in that few teachers participated in training and little effect was seen to have been gained, effectiveness of cost might be questioned. Still, this juror judged the Vermont IR&DT outcomes to be at least somewhat more useful than is typical for educational r and d.

Except for this dissenting comment, jurors agreed that the process was transportable and, although potentially expensive, worth it in terms of the effective involvement of teachers to inquire into their classroom problems. As one juror put it, "The impact at that site may really have made a bigger difference compared to where they started." Others could benefit as well, in their opinion.

Teacher educators. Usefulness of educational r and d also is of concern to a third group of practitioners, the teacher educator. An assumption stated in Chapter One is that both the products and the processes of IR&DT would be perceived to be useful by teacher educators. In order to examine this assumption, a jury of three persons was organized. Three teacher educator perspectives were tapped in selecting the jury: the teacher educator at what is considered to be primarily a teacher training institution and who is involved heavily in both preservice and inservice teacher education; the teacher educator at a large, urban university that both trains preservice and inservice teachers and grants advanced degrees in teacher education; and the teacher educator on the faculty of a university graduate school of education concerned primarily with advanced degree teacher education programs.

Criteria and judgments were brought to the meeting of the jury held in Chicago, Illinois on Wednesday afternoon and Thursday morning, February 28 and March 1, 1979. These were used as the basis for judging the teams' r and d reports. As with other juries, final criteria used as well as judgments made were accomplished by discussion and consensus decision making. A description of the jurors, their criteria, and their judgments follows.

Members of the jury. There were three people on the jury, two female and one male. Each brought to the task considerable expertise from among the perspectives described above.

A life-long interest in inservice teacher education characterizes the first juror who perceives of inservice education more as a political than an instructional process. Two assumptions underlying inservice education which distress him are that (1) the teacher never is thought to be a professional, and (2) therefore, most inservice education is remedial in nature. A professor of education at Western Washington State College since 1968, he has served as chair of the Department of Education and has been a long-time director of a federally-funded National Teacher Corps program. As background, he counts teaching at both junior and senior high schools as well as serving on an intermediate educational agency staff as audiovisual director. He served as a member of the staff that developed one of the elementary school models for teacher education, and was an early contributor to the literature of competency-based teacher education.

The second juror currently is a professor of education at City University of New York where she serves on the faculties of both the Graduate School and University Center. A former junior and senior high school teacher of science for several years, she has combined her teaching background with her scholarship in educational measurement and statistics to create innovative programs for both teachers and graduate students in education. Among these are her current interest as a member of the New York City Teacher Centers Consortium where she is involved with staff training, program development, and research and evaluation activities. Other interests include performance based teacher education, teacher education for teachers of the handicapped, and a continuing interest in developing innovative evaluation for a number of instructional programs. A wide variety of professional publications attest to her activity in each of these areas.

"I hope I have not lost my sensitivity to the real life of the teacher," stated the third juror, "--how complicated it is, how difficult it is for people on the 'outside' to really empathize with the true complexity of the job." As a former elementary school teacher now at the higher education level, she considers her primary role that of mediating between the research community and the teacher. Associate Director for the Horace-Mann-Lincoln Institute and an associate professor in Teachers College, Columbia University, she spent leave during the past year as a project coordinator for the California Commission for Teacher Preparation and Licensing. Her activity focused on developing procedures for disseminating the findings of the Beginning Teacher Evaluation Study. She has taught in the public schools of California at both the elementary and junior high levels. Her broad recognition as an observer of and scholar in the area of teacher change is represented by her many professional publications and appearances at national conferences.

Criteria. The jury developed three major criteria, each to be used in conjunction with five general r and d practices which served as the focus for judgment of the usefulness of the r and d outcomes for each team. In developing their criteria, jurors kept in mind four potential client groups of educational r and d. These were teachers, especially in relation to classroom practice; teacher trainers involved in preparing preservice teachers and in practicing teachers' professional development; researchers involved either in research on teaching or research on teacher education; and collaborative r and d efforts in general, wherever and whenever they have been or are being utilized. On this last point, jurors especially were concerned that their judgment reflect knowledge about other such efforts so that comparison with these could be made.

The three criteria are:

1. Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"
2. Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?
3. Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

Each criterion was used in conjunction with the five r and d practices listed below. The jury divided four of these into two aspects, product and process. The fifth practice, Reporting, was considered by the jury to include both product and practice. The five r and d practices for each criterion are:

1. The question
    a. Product: Is the question part of a larger problem area? Is it "true" to the work life of teachers? Is it reasonably complex enough to be worth knowing about? Does it relate significantly to theories of practice? Is it clearly linked to outcomes and procedures of each r and d step?
    b. Process: Was the research question identified through use of a team approach? What efforts were made to validate the question with other teachers? What attempts were made to establish linkage between the question and previous possible work in the same area?
2. Data collection
    a. Product: Were appropriate data sources identified? To what degree do data reflect accurately information necessary to answer the question? Were appropriate data collection procedures designed, tested, and enacted such that data can be assumed to be reasonably reliable?
    b. Process: Were data collection strategies selected and tested that insure minimal interference with the naturalness of classrooms? Were data collectors appropriately selected and trained to a reliable level?
3. Data analysis and interpretation
    a. Product: Were data analyzed appropriately such that linkage between analysis, data, research objectives, and the question was clearly established? Was interpretation of data appropriate and reasonable given nature of and analysis of data?
    b. Process: What processes were utilized to analyze data, and were these appropriate given the question and nature of the data? Who analyzed data? Who interpreted data and drew conclusions?
4. Reporting: Do reports reflect accurately and depict clearly both the research and the training? Are they written such that they are easily understood by multiple users, e.g., teachers, teacher educators, as well as researchers? Are data displays appropriate and useful? Was there obvious participation by all team members in report writing?

5. Training application

   a. Product: Is the training product useful and transferable? Are objectives clearly stated and appropriate measurement included? Are materials and resources clearly thought out and appropriate to the objectives? Are instructional activities appropriate and varied?

   b. Process: Was training effective for participants in the pilot program? Were learning outcomes substantiated and tied to objectives? Was sufficient incentive for participation present? Were feedback devices utilized both for participants and instructors?

When used in conjunction with each of the three criteria above, these five r and d practices provided 27 judgment events for the jury.

Application of criteria. Criteria were applied independently to each of the two teams' r and d outcomes. Jurors read both research and training/development reports for both teams in order to accomplish this task. In addition, it is important to reiterate that jurors decided to consider effect upon four client groups in making their judgments: teachers, teacher trainers, researchers, and collaborators on r and d teams.

A different five-place judgment scale was developed for each of the three criteria. The major differences between the judgment scales is in specificity of language used. Thus, descriptors in each scale emphasize degrees of difference for each criterion in relation to the five r and d practices.

1. Perceived value:
   - Very high value
   - High value
   - As valuable as typical educational r and d
   - Some value; users would anticipate that item would have limitations
   - little value
2. Transferability:
   - little or no change would be needed to adapt the item

- Can be applied with some modifications
- Application as easy as typical educational r and d
- Many modifications necessary
- Little possibility of application; would require many changes

3. Cost effectiveness:

- Minimum cost; cost would be no factor
- Some cost but manageable
- Costs about same as typical educational r and d
- Expensive
- Considerable cost; requires external funding

Following is a discussion of the evaluation of each team's r and d outcomes for each of the 27 judgment events enumerated above (3 criteria times 9 r and d product/process practices). It should be noted that the jury did not assign differential weight to any single criterion. Thus, one criterion or judgment event cannot be considered to be more important than another.

For purposes of clarity, the discussion has been organized to consider each of the five r and d practices in turn. Judgments for each criterion in relation to these--perceived value, transferability, and cost effectiveness--are reported in order. For each, clarifying or relevant statements made by jurors have been included, particularly as they relate to the four client groups considered by the jury in rendering their judgments.

Judgment of the California IR&DT team's r and d. The jury reached consensus on each of the 27 judgment events for the r and d outcomes of the California IR&DT team. The discussion that follows reports the jury's deliberations.

1. R and d practice: The question

   a. Product: Is the question part of a larger problem area?

Is it "true" to the work life of teachers? Is it reasonably complex enough to be worth knowing about? Does it relate significantly to theories of practice? Is it clearly linked to outcomes and procedures of each r and d step?

b. Process: Was the research question identified through use of a team approach? What efforts were made to validate the question with other teachers? What attempts were made to establish linkage between the question and previous possible work in the same area?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: Very high value.

A unanimous judgment was recorded by the jury for the California IR&DT team's r and d question, judging it to be of very high value both in terms of the nature of the question and the process utilized to obtain it. Further it was judged to be as important for all four of the client groups considered by the jury.

The question itself was called "conceptually elegant and imminently practical" by one juror who went on to say, "It really arose out of an indigenous problem [to the classroom]. The problem for the teachers as a group was also a problem for the teachers individually, which is rare." Another stated, "As a product, I think it will be very useful." For teacher trainers, the research question was cited as "an excellent example which is useful for training." In terms of its use for the world of research, jurors cited current interests nationally in instructional time. "The assumption we have been kicking around for three or four years," stated one juror, "is, 'All you have to do is increase instructional time on task, and achievement is going to go up.' Now here's a question that asks, 'What gets in the way of increasing time?' To my knowledge, it (the question) has not been looked at quite in this particular way."

In relation to the process as well, the jury was enthusiastic in its praise. Said one juror, "The process is much more spectacular than the product. However, I guess, compared to the norm they're both spectacular!" Another called the process "rather remarkable, because I see it (the IR&DT process) as extraordinary." The interweaving of product and process was evident to the third juror who admitted, "They really aren't separate. But, in terms of usefulness, the process is much more relevant."

> Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?
>
> - Overall judgment: Between "Little or no change would be needed to adapt the item" and "Can be applied with some modifications."

The jury agreed that, as a product, the question was easily transferable for teachers or for other collaborative r and d efforts, but that it probably was applicable only with modifications for both teacher trainers and researchers. In terms of the process for deriving the question, jurors found applicability to be a potential problem only in the case of researchers.

While the jury recognized that the question as a product could be transferred to other sites by teacher trainers, it pointed to potential problems matching up preconceived questions with the needs of a given group of teachers to be trained. In this respect, the jury agreed with an underlying assumption of the IR&DT strategy: questions for an r and d effort ought to be derived by teachers involved in that effort. Given that a group of teachers to be trained concurred that the question as stated was important, the teacher trainer conceivably should have little difficulty with transfer. Otherwise, problems might be expected. As well, as one juror said, "If you were the trainer, and you didn't honor the question in the first place, I doubt if you could [or would] make use of it."

For both product and process in relation to research on teaching and/or teacher education, the jury was more pessimistic. Even though jurors suggested that the question as product or as process could be transported by researchers, they pointed to existing practice in the research community as presenting somewhat of a bias against their doing so. "Researchers want parsimonious explanations," reflected one juror, "and in order to do that, it (the research question) needs to be tied to a stronger theoretical basis than it was." Another juror agreed, stating, "I think the researcher would want to see the question more refined. The first thing would be to try to refine that question a bit so that I could generalize the data that I get." About this bias, jurors also registered some uneasiness as reflected by this comment: "It's very hard, I think, for a researcher to place this process into a familiar context. In the worlds of ideal research, it's not a process that ties neatly into theory testing or hypothesis generation. In a way, this is somewhat of a revolutionary look at how one could get research questions, so in some ways it could open them (researchers) up."

> Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?
>
> - Overall judgment--
>
>   Product: Minimum cost; cost would be no factor.
>
>   Process: Between "Minimum cost" and "Some cost, but manageable."

Cost effectiveness was judged to be no problem so far as the question as a product is concerned. Jurors believed that, as stated and framed for inquiry, the question could be used at minimum cost and with ease of transfer. So far as the process for generating the question is concerned, jurors also saw minimal problems in terms of cost effectiveness for teachers, teacher trainers and other collaborative r and d efforts. For the researcher, however, jurors were quite skeptical.

"For the teacher and the teacher trainer, the process (of identifying the question) is like the message--the process is the training," observed one juror. "Therefore, it's cost effective. But for the researcher, it's a complication because it's like an appendage [to what (s)he's got to do]." By this, jurors meant that most researchers, given a limited budget, would perceive the process used by the California IR&DT team to identify the question as requiring an unusual amount of time and money and therefore might not find it useful. However, jurors also suggested that the validity of the question had been established by the process used, and researchers might want to reallocate monies to achieve the same level of validity rather than relying on more conventional techniques like literature reviews.

2. R and d practice: Data collection

   a. Product: Were appropriate data sources identified? To what degree do data reflect accurately information necessary to answer the question? Were appropriate data collection procedures designed, tested, and enacted such that data can be assumed to be reasonably reliable?

   b. Process: Were data collection strategies selected and tested that insure minimal interference with the naturalness of classrooms? Were data collectors appropriately selected and trained to a reliable level?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: Between "Very high" and "High" value.

Data collection products and processes reported by the California IR&DT team were seen to be very useful for collaborative r and d efforts. However, they were judged in terms of perceived value to be of diminishing use for teacher trainers, teachers, and researchers.

As jurors indicated, the data collection instruments, the training of observers, and the process utilized would be highly useful for another collaborative r and d effort. In particular, jurors found relevant the process for arriving at decisions about all of these, and felt other r and d teams could utilize such a strategy.

"I don't think the [typical] teacher trainer could manage this (data collection) without a researcher," commented one juror. For this reason, trainers probably would find the process of learning to become a good observer to be valuable for purposes of training teachers, but jurors believed that the product itself (data collection instruments) would be perceived to be less useful. Still, the jury found this criterion to be at least of high value for teacher trainers in regards to its usefulness. "I would value the process as a training process," said a juror, who went on to caution, "[but] I might have to make some serious changes in the way I work with teachers as a trainer."

For teachers, the jury found the data collection products and process to be only of high value. While they believed teachers would find interesting the use of such data collection devices for purposes of learning about their own classroom interactions, jurors pointed out that using such instruments is not an ordinary activity for teachers. In addition, it was thought unlikely that teachers would become involved in such a process of collecting data as part of a usual teacher training activity. Still, given the opportunity and appropriate resources, teachers were believed to be highly responsive to such a focus for inquiring into their own classrooms.

Researchers were seen to be the least receptive to either the product or the process of data collection utilized by the California IR&DT team. The jury believed researchers would find them to be no more useful than those already being used in typical educational r and d. Data collection instruments were observed to be similar to those already being used by researchers. The process of allowing teachers to participate in determining data collection strategies and tuning them to use in the classroom without upsetting the ongoing ecology was identified as a potential problem for most researchers who are more used to making such decisions themselves.

> Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?
>
> - Overall judgment: Between "Little or no change would be needed to adapt the item" and "Can be applied with some modifications."

Transferability of either products or processes of California's data collection was judged to be easiest and most useful for other collaborative r and d efforts. However, the jury believed them to be easily transferable for teachers, teacher trainers, and researchers as well given that commitment to their use was demonstrated. The process particularly was found to be easily transferable for teacher trainers given the information provided by the reports.

> Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?
>
> - Overall judgment: Between "Some cost but manageable" and "Costs about same as typical educational r and d."

Given the outcomes of the California IR&DT team's data collection, the jury evaluated them to be slightly more cost effective than typical educational r and d outcomes. They were perceived to be more useful for collaborative r and d efforts as well as for teacher trainers and researchers, but not particularly useful in terms of their cost for teachers.

Teachers probably would need the most assistance in order to use either the data collection instruments or the process in their classrooms. While the jury agreed that information gained would be valuable and useful, the costs to get that information for each teacher would be prohibitive.

For teacher trainers, a cost issue might be that of transcriptions. The California data collection strategy called for transcribing data into typewritten narrative descriptions or displaying them on computer-originated printouts. Costs of this nature are unusual for teacher training, but they would have to be accommodated. The jury believed this would not be accomplished easily, but still thought reallocation of budget categories would render costs to be about the same as typical educational r and d given the outcomes of training for participants.

While researchers would find the data collection instruments highly cost effective, the process of collecting two kinds of data (quantitative and qualitative) and the production of typewritten narrative descriptions of classroom interactions was believed to be problematic. Still, the jury determined that such costs were within keeping of what researchers were used to paying. The question of use again was one of commitment.

3. R and d practice: Data analysis and interpretation

   a. Product: Were data analyzed appropriately such that linkage between analysis, data, research objectives, and the question was clearly established? Was interpretation of data appropriate and reasonable given nature of and analysis of data?

   b. Process: What processes were utilized to analyze data, and were these appropriate given the question and nature of the data? Who analyzed data? Who interpreted data and drew conclusions?

In evaluating the data analysis and interpretation products and processes of the California IR&DT team, the jurors considered all three criteria simultaneously. Their judgments are reported separately below, followed by a discussion of their deliberations.

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: High value.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Can be applied with some modifications.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment: Some cost but manageable.

As indicated above, the three criteria--perceived value, transferability, and cost effectiveness--were entertained simultaneously in the jury's deliberations for judging data analysis and interpretation. While products and process were considered separately for each of the four constituent client groups, jurors related to the others in their discussion. Judgments reported above indicate that, for this r and d practice, the California effort was considered to be more useful than typical educational r and d.

Jurors point to the usefulness of including teachers in analyzing and interpreting data, particularly for other collaborative r and d efforts. Said one juror about this, "Interpretation was a collaborative thing, and that kind of product is rare." In terms of the process, another juror stated, "When you get into a collaborative project, the greatest learnings are in the participation. Rarely does anyone write about that, though, in a way that [provides] people with examples." The latter comment refers to the Evolution of the Study which provided what the juror cited as a clear depiction of the process the team had gone through in conducting their analysis and interpretation. About this, a juror said, "The case studies gave me description that is relatively fresh and new. I got insights from teachers, and arguments about the data that you don't get in normal [research] reports."

For teachers, teacher trainers, and researchers in relation to the three criteria, the jury suggested varying degrees of usefulness. Teachers were believed to highly value both the product and the process of data analysis and interpretation, and this would make it relatively transferable with only slight modifications. However, while transfer of the product might be attained easily at little cost, utilization of the same process was judged to be costly although not prohibitively so. As suggested earlier, given the total outcomes for teachers of participation in IR&DT, and particularly in relation to the perceived potential for professional growth, the jury believed costs were reasonable.

For teacher trainers, a similar pattern of rationale emerged. Teacher trainers no doubt would perceive the data analysis and interpretation to be imminently useful. In addition, given that the teacher trainer's value system corresponded to the content of training, transfer was seen to be possible with only slight modification. Cost effectiveness, however, was seen to diminish in direct proportion to the amount of technical assistance teacher trainers would need to operationalize the process. Earlier, it was suggested that implementation of data collection strategies for training purposes might involve the use of a researcher. This was judged to be true for data analysis and interpretation as well, since operationalization of the process used by California requires some knowledge of the research process and a degree of sophistication concerning use of qualitative and quantitative data. Inasmuch as these skills are not usually possessed by teacher trainers, involvement of a researcher as a consultant or a second instructor would add to the cost of training.

In turning to the researcher, the jury suggested that although data analysis and interpretation would be perceived to be about as valuable and useful as that typical for educational r and d, on the other hand it would be easily transferable and minimally more costly. In other words, while it might be easy to transfer the product and process used by California in analyzing and interpreting their data, and while it may be highly cost effective, the jury recognized that most educational researchers probably would not value either highly enough to use them. Thus, for researchers, the jury found this r and d practice to be of equal value and use in comparison to those which researchers might already be using.

4. R and d practice--Reporting: Do reports reflect accurately and depict clearly both the research and the training? Are they written such that they are easily understood by multiple users, e.g., teachers, teacher educators, as well as researchers? Are data displays appropriate and useful? Was there obvious participation by all team members in report writing?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: Very high value.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Little or no change would be needed to adapt the item.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For researchers and collaborative r and d: Minimum cost; cost would be no factor.

  --For teachers and teacher trainers: Cost about same as typical educational r and d.

It will be recalled that the jury combined product with process for this r and d practice. Thus, in judging for the three criteria in relation to reporting for the California IR&DT team, the jury considered each separately in relation to both product and process and for each constituent client group. As can be seen from their judgments above, both perceived value and transferability were seen to be highly useful and possible for all four constituent groups. Cost effectiveness, however, was considered to be critical for teacher and teacher trainers in relation to the product and the process for reporting.

About the reports themselves, a juror observed, "The enthusiasm comes through in this for the whole thing. The Evolution of the Study document was particularly helpful. And the teachers writing their case studies I looked upon as [being] very valuable." Another juror agreed, stating, "In this situation, while it was unusual, the process was so compelling that the teachers were willing to do this." A final comment was made by this juror, who reported, "This is only the second project that I have read about or heard about where teachers were willing to spend that kind of time, [and I believe it was] because the process was so exciting to them."

An essential cost here was time, both for reading the reports as products and for participation in such activities as a regular part of teaching or as a focus for teacher training. Researchers and collaborative r and d groups conducting a piece of research would find the cost minimal. Said one juror, "For researchers and for collaborating research teams, this is their business, this is their need." Therefore, because it is a regular part of their activity, the act of reporting and/or the reading of such a report was seen to be both practical and useful. For teachers, however, the time needed to read the reports was perceived to be a problem. In addition, reflecting on the amount of time devoted by teachers to writing the case studies, a juror said, "It's costly for teachers to do that data analysis and interpretation. Very costly." Still, jurors felt the cost might have been worth it. As one juror said, "The process becomes more meaningful when you sit down and, rather than just talk about it, you have to write about it." Another juror agreed, "There's more significance, but it's more costly in terms of time."

5. R and d practice: Training application

   a. Product: Is the training product useful and transferable? Are objectives clearly stated and appropriate measurement included? Are materials and resources clearly thought out and appropriate to the objectives? Are instructional activities appropriate and varied?

   b. Process: Was training effective for participants in the pilot program? Were learning outcomes substantiated and tied to objectives? Was sufficient incentive for participation present? Were feedback devices utilized both for participants and instructors?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: Very high value.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Can be applied with some modifications.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For teachers, teacher trainers, collaborative r and d: Costs about same as typical educational r and d.

  --For researchers: Expensive.

The jury began deliberation for this r and d practice for the California IR&DT effort by reviewing the four prior practices. As for others, it was agreed that training application as it was being used by the jury inferred information for researchers as well as the other three constituent client groups. In that the end product for the user is usefulness of any findings from research, the jury believed a researcher ought to be interested and affected by how findings are applied. As well, jurors pointed out that in this particular process, the interactiveness of the processes/products of research and training/development rendered the training experience as valuable as the conduct of the research itself. Thus, jurors considered it appropriate to include the research perspective in their deliberations and evaluation for this r and d practice.

Obviously from their judgments above, both perceived value and transferability were considered to be highly useful for all four constituent client groups. As one juror said, "Most of the criticism that researchers have of collaborative research is that it can never be transferred because the learnings are so personal. Here, you have it all." Another juror agreed, citing other collaborative r and d efforts such as the Triple T programs which were difficult to replicate because they were not carefully enough documented. "This (California IR&DT experience) is described carefully and [therefore] is much more transferable than other collaborative projects." At the same time, another juror countered, "I think a researcher would be uncomfortable in this kind of training," but agreed that they "could look at it (the training) in comparison with other training." Still, given the results of the interactiveness between research and training/development on the California IR&DT team the jury evaluated their efforts in relation to training to be quite useful for all in terms of both value and transferability.

So far as costs are concerned, the jury believed that teachers, teacher trainers and other collaborative r and d groups would find them to be about usual for educational r and d. For researchers, however, they cautioned that costs would be regarded to be too high. Said one juror, "I think this is a high-cost thing for a researcher," citing the amount of money typically made available for research projects as a comparison. Another juror, however, suggested that when compared with several recent large-budget research projects in terms of proven, documented effect, "It's cheap!" Such large budgets were observed to be the exception, however. "There's a difference between research in an r and d center and research at a university," said a juror who went on to cite several examples of typical inquiry found at his/her university. "Still," (s)he said, "I think the cost is cheap compared to other kinds of things that I've attempted to replicate.' Agreeing, this juror said, "All research work is very expensive. People who look at these might say, 'Yes, they spent a lot of money for what they found out.' I look at this study and I say, 'It's a little amount of money for what they have done!'" As with other juries, this one asked for and received approximate costs of the California IR&DT project. Given this information, jurors agreed that cost for the production of both r and d were less than what they had assumed, but believed that most researchers still would be skeptical.

This completes the judgment for the California IR&DT team's r and d outcomes. The jury's deliberations and evaluation of the Vermont IR&DT team's efforts are taken up next.

Judgment of the Vermont IR&DT team's r and d. For each of the 27 judgment events for the three major criteria in application to the Vermont IR&DT team's r and d outcomes, the jury reached consensus. The discussion that follows reports the deliberations. Whenever clarifying or relevant statements were made by jurors, these have been included, particularly as they relate to the four constituent client groups considered by the jury in rendering their judgments.

Two factors are noteworthy here. First, in judging the Vermont IR&DT team's r and d outcomes the jury reported a separate rating for each criterion. However, discussion included all three simultaneously and in relation each to the others. Thus, the presentation below reflects the interrelating of the remarks for the three criteria. Second, midway through the jury's deliberations, time allocated for its meeting ran out and one of the jurors had to leave for an important commitment. The jury decided at that point to render its judgments in written form and file individual written comments. Thus, subsequent reporting below will report and reflect the point at which this occurred. The discussion for remaining criteria will be noted to be understandably brief.

In addition, it can be said that generally the jury was relatively unimpressed with the Vermont IR&DT team's r and d product such that deliberations were subsequently shortened considerably. However, the process through which the team achieved its outcomes was seen positively. The jury believed that, regardless of the nature of the research or training/development as reported, members of the team had participated in an important and effective professional growth activity.

1. R and d practice: The question

   a. Product: Is the question part of a larger problem area? Is it "true" to the work life of teachers? Is it reasonably complex enough to be worth knowing about? Does it relate significantly to theories of practice? Is it clearly linked to outcomes and procedures of each r and d step?

   b. Process: Was the research question identified through use of a team approach? What efforts were made to validate the question with other teachers? What attempts were made to establish linkage between the question and previous possible work in the same area?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: Between "Some value; users would anticipate that item would have limitations" and "Little value."

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment:

  --For collaborative r and d: Between "Can be applied with some modifications" and "Application as easy as typical educational r and d."

--For teachers, researchers, teacher trainers: Between "Many modifications necessary" and "Application as easy as typical educational r and d."

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For collaborative r and d: "Minimum cost; cost would be no factor."

  --For researchers: "Some cost but manageable."

  --For teachers and teacher trainers: "Costs about same as typical educational r and d."

In relation to the question, the jury found the Vermont IR&DT team's r and d outcomes to be questionable. About the question as a product, one juror said, "In reading the report, it struck me as not being worth doing." A second juror agreed and added, "The movement on this seemed to be in the process." Perceived value of either product or process, then, was judged to be low for all constituent client groups.

Transferability also was judged to be below the norm for teachers, researchers, and teacher trainers. Primarily, because the product--the question --was perceived to be of questionable value, the jury doubted its potential to be transferred to their site by any of these three constituent client groups. In terms of the process, however, other collaborative r and d efforts still might find some value.

Cost was not considered to be a determining factor for any of the constituent client groups. Rather, commitment to the question and/or the process used by the Vermont IR&DT team in arriving at the question would determine its use.

2. R and d practice: Data collection

   a. Product: Were appropriate data sources identified? To what degree do data reflect accurately information necessary to answer the question? Were appropriate data collection procedures designed, tested, and enacted such that data can be assumed to be reasonably reliable?

   b. Process: Were data collection strategies selected and tested that insure minimal interference with the naturalness of classrooms? Were data collectors appropriately selected and trained to a reliable level?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: As valuable as typical educational r and d.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Application as easy as typical educational r and d.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For researchers and collaborative r and d: Some cost but manageable.

  --For teacher trainers: Costs about same as typical educational r and d.

  --For teachers: Expensive.

As is made evident by their reported ratings above, the jury found data collection products and processes for the Vermont IR&DT team's r and d effort to be about as useful as typical educational r and d. This was judged to be so for all four of the constituent client groups. Only in terms of cost effectiveness was there assumed to be higher utility, and this is reflected in the jury's judgment for the researchers and other collaborative r and d efforts.

Although jurors recognized that data collection strategies were designed to tap mood information in an attempt to establish a relationship between teacher mood and supportive instructional behavior, they questioned whether such data could reveal enough appropriate information to answer the question. The mood rating instrument, for instance, should have been tested to determine whether it discriminated between high and low mood. Given some information about supportive instructional behaviors for a teacher's high mood in comparison with his or her low mood, the question might be of some use. In the opinion of the jury the Vermont IR&DT team did not establish substantially the existence of such a relationship, so its outcomes are of limited value.

The process of data collection utilized by the Vermont IR&DT team, however, was believed to be of some limited use. Jurors cited the collection of qualitative data as being cost effective both for researchers and for other collaborative r and d efforts. Given that either constituent client group was committed to this form of data collection, jurors believed that its cost would be within normal boundaries.

It should be noted that at this point in their deliberations, one of the jurors was called to attend to a previously scheduled and important commitment. The jurors decided to record their judgments without comments, but to provide written comments to the Laboratory facilitator for the jury. These are used in the discussion for the three r and d practices below.

3. R and d practice: Data analysis and interpretation

   a. Product: Were data analyzed appropriately such that linkage between analysis, data, research objectives, and the question was clearly established? Was interpretation of data appropriate and reasonable given nature of and analysis of data?

   b. Process: What processes were utilized to analyze data, and were these appropriate given the question and nature of the data? Who analyzed data? Who interpreted data and drew conclusions?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment:

  --For teachers, teacher educators, collaborative r and d: As valuable as typical educational r and d.

  --For researchers: Some value; users would anticipate that item would have limitations.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Application as easy as typical educational r and d.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For researchers and collaborative r and d: Minimum cost; cost would be no factor.

  --For teachers and teacher trainers: Costs about same as typical educational r and d.

For data analysis and interpretation, jurors rated the Vermont IR&DT team's r and d product and process generally as useful as those typical for educational r and d. Again, while the product was found to be lacking in that appropriate linkage between analysis and interpretation and the research question was not made apparent in the report, the process itself was found to be valuable. The jury noted that all members of the Vermont IR&DT team participated in data analysis, and this was cited as being desirable. Nevertheless, jurors noted also that researchers particularly would not perceive teacher involvement in data analysis and interpretation to be valuable. In the words of a juror, "This might be interpreted as contaminating the data." Given that a researcher did value such participation, jurors believed transferability could be accomplished easily and at minimal cost in comparison to typical costs for other educational r and d.

Cost effectiveness also was considered to be appropriate for teachers in terms of the product. That is, transfering results from the Vermont IR&DT data analysis and interpretation was not seen to be costly. Participation by teachers in such a process, however, would demand some costs but not exceed those typical for educational r and d. For other collaborative r and d efforts, costs were believed to be minimal for the process since time for members of such a team already was considered to be accommodated. What might be problematic, however, is "letting the teachers in," for as one juror pointed out, researchers usually perceive of this task as a function of their domain.

4. R and d practice--Reporting: Do reports reflect accurately and depict clearly both the research and the training? Are they written such that they are easily understood by multiple users, e.g., teachers, teacher educators, as well as researchers? Are data displays appropriate and useful? Was there obvious participation by all team members in report writing?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: As valuable as typical educational r and d.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Application as easy as typical educational r and d.

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment: Costs about same as typical educational r and d.

Reporting of the Vermont IR&DT team's r and d was judged to be about as useful as other educational r and d products and processes. Both research and training reports depicted activities and outcomes such that the jury found no problems with their communication. While jurors commented that teacher input to the actual writing of reports was not apparent and that this might have made the reports more presentable to a wider audience, nevertheless they found the reports to meet acceptable and usual standards.

5. R and d practice: Training application

   a. Product: Is the training product useful and transferable? Are objectives clearly stated and appropriate measurement included? Are materials and resources clearly thought out and appropriate to the objectives? Are instructional activities appropriate and varied?

   b. Process: Was training effective for participants in the pilot program? Were learning outcomes substantiated and tied to objectives? Was sufficient incentive for participation present? Were feedback devices utilized both for participants and instructors?

Criterion 1--Perceived value: What is the degree to which the user would anticipate that the product or process is likely to "make a difference?"

- Overall judgment: As valuable as typical educational r and d.

Criterion 2--Transferability: To what degree would the user perceive the product or process to be transferable to his or her own situation?

- Overall judgment: Between "Can be applied with some modifications" and "Application as easy as typical educational r and d."

Criterion 3--Cost effectiveness: What are the human resources, material resources, and time necessary for the user to use the product or process?

- Overall judgment:

  --For teachers, teacher trainers, collaborative r and d: Costs about same as typical educational r and d.

  --For researchers: Expensive.

For this final r and d practice, training application, the jury found the Vermont IR&DT team's efforts generally to be about as useful as typical educational r and d training products or processes. Particularly for teachers, teacher trainers, and other collaborative r and d efforts, the jury's opinion was that perceived value, transferability, and cost effectiveness were useful to the same degree as other educational r and d efforts with which these constituent client groups were familiar. Researchers, however, were believed to be less receptive either to product or process of the training.

Jurors commented that there was little in the training program of Vermont's IR&DT team that researchers would perceive to be of value. As a result, although elements could be transferred easily, jurors doubted that most researchers would be committed to do so. Thus, cost effectiveness was deemed to be expensive. For researchers, the amount of money spent and time expended to produce limited gain for only six teachers would be perceived to be wasteful.

This comprises the reporting of the six juries' deliberations in relation to the rigor and usefulness of the two IR&DT teams' research and/or training reports. The remainder of this chapter takes up a discussion of the rating of the same reports by experts and site counterparts.

Judgments of the IR&DT Teams' Research and Development Outcomes by Experts and Site Counterparts

The second means by which the research and training outcomes of the two IR&DT teams were judged was through solicited responses to questionnaires. As noted in Chapter Two, questionnaires were designed to elicit judgments from the points of view of practicing educational researchers, teacher educators, and teachers. The questionnaires appear in Appendix C.

For this judgment, two perspectives were included. The first was from the standpoint of a broad, national perspective to look at the r and d outcomes of both IR&DT teams. The second was from the standpoint of the local perspective of each of the two IR&DT sites. By including both perspectives, it was believed that information would be gained for each team's products in relation to comparison not only with educational r and d in the nation generally but with what is considered to be usual practice at each site at which IR&DT was implemented. The first group of persons is hereinafter referred to as experts, and the second group is referred to as site counterparts.

Experts were selected from a group of nominations submitted by FWL staff, NIE staff, and others in the educational community. For this activity, two researchers, two teacher educators, and three teachers were selected. Eacn was considered to have met criteria for participation developed by FWL prior to construction of the questionnaires. Site counterparts were nominated by each of the two IR&DT teams and included two researchers, two teacher educators and/or staff developers, and two teachers. Each team nominated for each of the three role counterpart categories (a) one person who was seen to be very much like the team member(s) in terms of orientation and predisposition to professional work, and (b) one who was believed to be very much unlike the team member(s) in these respects. Names of all of the above are included in Appendix D.

Participants on the experts group included an elementary school teacher from Brooklyn, New York nominated by the American Federation of Teachers; a dean of a college of education at a major midwestern university; a science coordinator for the Jefferson County Public Schools in Colorado; the director of research for the public schools of Philadelphia; a senior research associate with a major educational r and d institution; an elementary school teacher in the Montgomery County, Maryland county schools nominated by the National Education Association; and a teacher in the schools of Dallas, Oregon nominated by a member of the National Advisory Panel for IR&DT.

Site counterparts for California included two elementary school teachers in the unified school district; two researchers currently serving in the evaluation services unit of the school district; a member of the staff development unit in the school district; and a professor at a nearby state university involved in inservice teacher education.

Site counterparts for Vermont included two elementary school teachers from nearby schools; two members of the education faculty at the university familiar with and/or involved in conducting research; a deputy commissioner of education for the state department of education; and associate chairperson for the special education area on the education faculty at the university.

The discussion that follows considers judgments from both the experts and site counterparts. It should be noted that judgment was made on the basis of reading the research and/or training reports from each IR&DT team. No opportunities were provided for persons responding to the questionnaires to meet with or otherwise contact each other or team members. Calls made to FWL were of a procedural nature only, usually to clarify the task or to ask about delivery of materials. Thus, unlike the jury deliberations already discussed, respondents worked within a closed response system and worked independently.

For purposes of the following discussion, ratings of the experts and site counterparts are presented as responses to specific items on the questionnaire. Items are presented as well and are grouped as logically as possible, recognizing that there are certain items which could appear in several of the groupings. Responses are presented on tables as well as in accompanying discussion. Tables present responses as mean scores for both experts and site counterparts. While the small number of respondents for each item (N=2 or N=3) understandably is not as desirable as would be a much larger number, the attempt to provide specific judgments has resulted in meaningful data to inform both the consequences of implementing IR&DT and the judgments reported earlier in this chapter for the six juries.

Responses by each role group--researchers, teacher educators, teachers--have been grouped for purposes of presentation. Each is discussed in turn in the following sections.

Researcher Judgments of the IR&DT Teams' R and D Outcomes

Responses from six persons are included in the researcher judgments for the r and d from the California and Vermont IR&DT teams. Included are two expert researchers and two site counterparts nominated by each team. Researchers responded to 35 items on the questionnaire designed specifically to reflect the quality of the research conducted by the IR&DT teams. Items were concerned with (1) related research and theory, (2) purpose(s), (3) procedures, (4) findings, (5) organization and presentation, (6) originality, (7) contribution to the field, and (8) utility to the respondents. Each concern is taken up in turn below and discussed separately in relation to each team. Data, however, are presented on the same table for both teams, rendering comparison easier.

Related research and theory. As can be seen by examining Table V-1, the California team's research was seen to be strong in terms of related research and theory. All items were judged positively by both expert and site counterpart researchers. The opinions, then, support the conclusion that the California team used appropriate research and theory accurately and in alignment with the study's purposes and procedures.

There were some reservations and disagreements regarding the Vermont team's use of related research and theory in their research. These judgments came from the experts rather than from the site counterparts It will be noted that the most disagreement is with the relationship of the literature to the study's purposes. Also, there is a marked disagreement between the experts' opinions and those of the site counterparts, with the latter group

Table V-1

Researchers' Judgments of the IR&DT Teams' R and D: Related Research and Theory

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
1. The study reported uses appropriate theory	1.5	1.0	3.0	2.0
2. The theory cited is accurately interpreted	2.0	1.0	3.0	2.0
3. Prior related research is reported	1.0	2.0	2.5	2.0
4. Prior related research is supportive of the need for the study	1.0	1.5	3.5	1.5
5. In general, literature (theory, research, proposition) is directly related to the study's purposes	2.0	2.0	4.0	2.0
6. In general, literature (theory, research, proposition) is directly related to the study's procedures	2.0	2.5	3.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree;
5= Strongly disagree

responding more positively to the Vermont team's efforts. (This pattern is repeated throughout the judgments for both teams.)

In general, then, the California team's research efforts related to research and theory was judged positively by both expert and site counterpart researchers whereas the Vermont team's research was seen as less strong by experts but quite strong by site counterparts.

Purpose. Table V-2 displays the responses of researchers to items regarding purpose(s) of the IR&DT research. As was true for the previous section, the California team was rated highly by both experts and site counterparts. There was some reservation expressed by one expert about the appropriateness of the research procedures to achieving the purposes of the study. This one response was the only indication of reservation in this section of items.

Table V-2

Researchers' Judgments of the IR&DT Teams' R and D:
Purpose

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
7. The purpose(s) of the study is (are) clear and understandable	1.0	1.5	3.5	1.0
8. The literature cited, purpose of the study, and procedures are directly and logically related	1.5	1.5	3.5	1.5
9. The research procedures are appropriate to achieve the purpose(s) of the study	2.5	1.0	2.0	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4=Disagree;
5= Strongly disagree

The Vermont team's research purposes were seen less positively by the experts. Reservations and disagreements were expressed regarding the clarity of the purposes of the research and the relation among the literature, procedures, and purposes. Again, the site counterparts were more positively disposed toward these items than were the experts.

Regarding purposes, then, the California team's efforts were judged positively by both experts and site counterparts and the Vermont team's work was seen as somewhat problematic by experts but quite positively by site counterparts.

Procedures. Nine items were presented to respondents which asked for agreement to positively phrased statements regarding selection, use, and appropriateness of procedures used in the studies. As can be seen on Table V-3, the California team's work was judged very positively by both experts and site counterparts.

In contrast to the ratings of the California team's efforts, the experts expressed some reservations and disagreement with these items for the Vermont team. The analysis items, for example, were agreed to with reservation or disagreed with. The clarity of the report of the data collection procedures also was seen to be a problem. It will be noticed again that the site counterparts rated the Vermont team's work more positively than did the experts.

In sum, the procedures used in the conduct of IR&DT research were seen positively by both experts and site counterparts for the California team. For the Vermont team, procedures were seen somewhat negatively by the experts but more positively by site counterparts.

Findings. Table V-4 displays the judgments regarding findings of the two teams' efforts. The three items related to findings were responded to favorably for the California team by both experts and site counterparts. The site counterparts, in fact, indicated that they "strongly agreed" to these items for California.

Table V-3

Researchers' Judgments of the IR&DT Teams' R and D: Procedures

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
10. The procedures used are described clearly and adequately	1.5	2.0	3.0	2.0
11. The nature of the sample population is appropriate to the purpose(s) of the study	1.5	1.5	2.5	2.5
12. The size of the sample is reasonable, given the nature of the study and the constraints upon the research team	2.0	2.5	2.0	2.0
13. The data collection procedures are appropriate to the purpose(s) of the study	1.5	1.5	2.0	2.0
14. The data collection procedures are reported clearly	1.0	1.0	3.5	1.5
15. The data collection procedures were accurately implemented	1.5	1.0	2.0	1.5
16. The analyses of data are appropriate to the purpose(s) of the study	2.0	1.5	3.0	3.0
17. The analyses of data are explained clearly	2.0	2.0	4.0	2.5
18. The analyses of data are logically related to the data collected	2.0	1.5	3.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Table V-4

Researchers' Judgments of the IR&DT Teams' R and D: Findings

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
19. The findings of the study are clearly presented	2.5	1.0	3.0	2.0
20. The findings of the study are logically related to the purpose(s) of the study	2.0	1.0	2.5	2.0
21. The findings of the study are credibly related to the analyses of the data	2.0	1.0	3.5	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

For the Vermont team's efforts, the experts noted that there were some reservations about the clarity of the presentation of the findings and pronounced disagreement about the credible relation of the findings to analyses of the data. As is the pattern for other sections of this report, the site counterparts were more positively disposed to these issues than were the experts.

Organization and presentation. Four items were presented to respondents which dealt with the organization and presentation of the research reports. The responses are displayed on Table V-5. It can be seen that both teams' work was seen favorably with California receiving the more positive set of responses. Two related items, continuity and presentation, were agreed to for

Table V-5

Researchers' Judgments of the IR&DT Teams' R and D:
Organization and Presentation

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
22. The organization of the study is logical and clear	1.5	1.0	2.0	2.0
23. The continuity of the study (purpose, procedures, analyses, findings) is consistent and logical	1.5	1.0	2.5	2.0
24. The presentation of the study report is clear	2.0	1.0	3.0	2.0
25. The study report is well written (grammar, syntax, punctuation, etc.)	1.0	1.5	2.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree;
5= Strongly disagree

the Vermont report but that agreement tended toward "agree with reservations." Again, the site counterparts' judgments in general were more positive than the experts' ratings, although the site counterparts' scores for the Vermont study were less positive than those for the California team's work.

Originality. Two items asked respondents to agree that the studies were original/unique in conception and in procedures. Both the California and the Vermont studies were seen as original by both experts and site counterparts with California receiving somewhat higher levels of agreement than Vermont. The responses are displayed on Table V-6.

Table V-6

Researchers' Judgments of the IR&DT Teams' R and D: Originality

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
26. The study is original/unique in conception	1.0	1.0	1.5	2.0
27. The study is original/unique in its procedures	1.5	1.5	2.0	2.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Contribution to the field. The utility of the studies to both practitioners and researchers was seen as an important area of judgment. As can be seen by examination of Table V-7, experts and site counterparts saw the research as having utility for these two groups of persons. As has been the pattern for other groups of items, California was seen more positively than Vermont and site counterparts responded more positively than experts in most instances.

Utility to respondents. Because IR&DT has been advanced as an alternative to conventional r and d, it was considered important to determine whether or not, after reading the reports of the two teams, researchers would use the studies, procedures, and/or team approaches for the conduct of educational r and d. Table V-8 displays responses to the four items designed to elicit this information. The California team, it was agreed by both experts and site counterparts, produced a good example of research on teaching. In addition, it was indicated that their procedures would be used, and that the team approach was seen to be a positive mode for conducting research and development on teaching.

Table V-7

Researchers' Judgments of the IR&DT Teams' R and D: Contribution to the Field

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
28. The study is a strong contribution to understanding teaching as an activity	1.5	2.0	3.0	2.5
29. The study, generally, provides insight into an important aspect of teaching	1.5	1.0	2.5	2.0
30. The study will be useful to researchers in terms of the procedures involved	2.5	1.0	2.5	2.5
31. The findings of the study are potentially useful to the conduct of further research on teaching	3.0	1.0	2.5	2.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

The Vermont report was less favorably viewed by both experts and counterparts although the latter were more positive than the former. The experts agreed to the items with reservations, particularly the one suggesting use of the study as a good example of research on teaching. It is interesting to note that the team approach was viewed differently by the same two experts who read both reports. After reading the California report, the team approach was seen as having research utility for respondents, whereas after reading the Vermont

Table V-8

Researchers' Judgments of the IR&DT Teams' R and D:
Utility to Respondents

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
32. I would use the study as a good example of research on teaching	2.0	1.5	3.5	2.0
33. I would use the study's procedures (intact or slightly modified) in research on teaching if they related to my research intentions	2.0	1.0	3.0	2.0
34. I would use (or urge others to use) the team approach to research as presented in the study report	2.0	1.0	3.0	2.0
35. I believe there are more advantages than disadvantages to the team approach to research on teaching as presented in the study report	2.0	1.5	3.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

report the respondents were less enthusiastic about the approach.

The studies and the team approach to their formulation and conduct, then, were viewed differently for the two teams with California receiving the more positive set of responses and Vermont the less positive.

Summary of researchers' judgments. Several conclusions can be advanced regarding expert and site counterpart judgments from the researcher perspective of the two IR&DT teams' reports. Overall, the California team's efforts were seen very positively by respondents to the questionnaires. Almost all responses indicated agreement with positively stated assertions about the team's work with only one instance of agreement with reservations. The Vermont team's work was viewed more cautiously by experts in particular and by site counterparts occasionally. It was most common for experts to "agree with reservations" to the items presented in the questionnaire. Although there were few instances of disagreement, the pattern for the Vermont work was one of lower estimation than was the case for the California team's work. Further, it is interesting to note that the overall pattern for both teams was for site counterparts to be more positively disposed to the teams' work than the experts.

Teacher Educators' Judgments of the IR&DT Teams' Development Outcomes

For the teacher educator judgments of California's and Vermont's IR&DT teams' efforts, responses from six persons are included: two from the experts, and two site counterparts selected by each team. Teacher educators were asked to respond to 34 positively-worded statements regarding development efforts as presented in the teams' final reports. Items for the following discussion are grouped into 9 categories as follows: (1) purpose(s), (2) related research and theory, (3) activities, (4) context, (5) originality, (6) evaluation, (7) resources, (8) presentation, and (9) utility. Each category is taken up in turn and discussed in relation to each team's efforts separately. Data, however, are presented on the same table for both teams for ease of comparing results.

Purpose. As can be seen on Table V-9, both teams' development efforts, as reflected in final reports, were judged positively in relation to purposes.

Table V-9

Teacher Educators' Judgments of the IR&DT Teams' Development: Purposes

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
1. The purposes of the program are clear	1.0	1.0	1.0	1.5
2. The rationale for providing the program to teachers is clear	1.0	1.0	1.5	1.0
3. The purpose(s) of the program are important to teaching	1.5	1.0	1.5	1.0
28. The program offers important growth opportunities for participants	1.5	1.0	2.5	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

This positive stance is found in both the experts' opinion and site counterparts' opinion. As is the pattern for much of the quesionnaire data, the California work is seen more positively than the Vermont work and the experts' opinion is slightly less positive, though not sharply so, than the site counterparts' opinion.

Related research and theory. Two items were formulated which asked respondents to agree or disagree with statements about an adequate research and theory base for the development efforts of the teams. Table V-10 shows that the California team's development was seen to have adequate research and theory bases by both experts and site counterparts, whereas for Vermont the experts had reservations about the adequacy of the research base and even stronger reservations about the adequacy of the theoretical base for the development efforts.

Table V-10

Teacher Educators' Judgments of the IR&DT Teams' Development: Related Research and Theory

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
4. The program has an adequate research base	2.5	2.5	3.0	2.5
5. The program has an adequate theoretical base	2.0	1.5	4.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Activities. Six items were presented to respondents which asked questions related to the adequacy of the activities reported in the development reports. It can be seen from examination of Table V-11 that the activities presented by both teams were seen to be positive. The one exception was the experts' reservations regarding the Vermont team's purposes and activities as they might be considered important by preservice teacher education students. Again, the site counterparts, in general, were more positively disposed to the development activities than were the experts, though both groups were positive.

Context. Two items, one procedural and one ideological, were formulated for response by teacher educators. It can be seen from Table V-12 that the

Table V-11

Teacher Educators' Judgments of the IR&DT Teams' Development: Activities

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
6. The program's activities are logically related to its purposes	1.0	1.0	2.5	1.0
7. The program's activities reflect the realities of teaching	1.5	1.0	1.5	1.0
8. The program's sequence of activities is logical and related to its intention(s)	1.5	1.0	1.5	1.5
9 The program's activities are original/unique to teacher education generally	2.0	2.0	1.5	2.0
10. The program's purposes and activities would be considered important by preservice teacher education students	2.5	2.5	3.0	1.0
11. The program's purposes and activities would be considered important by experienced teachers	2.0	1.0	2.5	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Table V-12

Teacher Educators' Judgments of the IR&DT Teams' Development: Context

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
12. The context(s) of the program (i.e. where it takes place) is (are) logically related to the purposes and activities	1.5	1.5	2.0	1.0
13. The program has a reality base rooted in the concerns of teachers	1.0	1.0	2.0	1.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

contexts of the programs were seen to be related to the programs' activities and purposes. Further, the program is believed to be related to the concerns of users, in this instance teachers. Again, California was rated somewhat higher than Vermont, with the site counterparts for Vermont rating more highly than did the experts.

Originality. Because IR&DT was believed to be markedly different in process and product from conventional educational r and d, the teacher educators were asked to respond to two items which focused upon the degree to which the development programs were different from pre and inservice education programs known by the respondents. Also, because IR&DT was enacted largely by teachers in ongoing classrooms (as opposed to laboratory settings), one item was formulated which asked whether the strategy resulted in attention being given to neglected aspects of teaching. As can be seen by examining Table V-13, the respondents agreed that both teams' development efforts were both different from preservice and inservice education programs they knew of and also reflected heretofore neglected aspects of teaching.

Table V-13

Teacher Educators' Judgments of the IR&DT Teams' Development: Originality

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
14. The program differs markedly from most preservice teacher education of which I am aware	1.5	1.0	1.5	1.5
15. The program differs markedly from most inservice teacher education of which I am aware	1.5	1.5	1.0	1.5
29. The program reflects heretofore neglected aspects of teaching	2.0	1.5	2.0	1.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Evaluation. Essential to any program of teacher education is a well-defined evaluation component. Respondents were presented with seven items which asked for the degree to which evaluation was given proper attention by the IR&DT development programs. The California development program was seen by experts to adequately attend to most evaluation issues. However, there were some reservations about the comprehensiveness of the evaluation findings and the relation of the data collection procedures to evaluation purposes. These findings, presented in Table V-14, are the least positive teacher educator

Table V-14

Teacher Educators' Judgments of the IR&DT Teams' Development: Evaluation

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
16. The program has an adequate evaluation component	2.5	1.5	3.5	2.5
17. The reported evaluation of the program is based on logically related data	2.0	1.5	3.0	2.0
18. The evaluation findings are comprehensive	3.0	1.0	3.5	3.0
19. The data collection procedures for evaluation purposes are adequate	3.0	1.0	3.0	2.5
22. There is adequate provision of feedback to participants in the program	1.5	2.0	2.5	1.0
23. The report provides evidence that participants in the program were enthusiastic about their participation	1.5	1.0	2.5	1.5
31. The report provides evidence that participants in the program changed (behavior, beliefs, values, etc.) as a consequence of participation	2.5	2.5	3.5	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

judgments of the California program.

Vermont's IR&DT development program also was seen by experts as less than ideal in terms of evaluation. On only two of the seven items do the experts agree to the statements without reservations. Three of the items--adequacy of evaluation, comprehensiveness of the evaluation findings, and provision of evidence that the program changed behavior--resulted in responses from experts which moved toward disagreement. This section, evaluation, received the least positive responses for the Vermont team as it did for the California team. The site counterparts, however, remained substantially more positive regarding the adequacy of the development programs' evaluation aspects.

Resources. Table V-15 illustrates that experts and site counterparts agreed that the two IR&DT teams' development efforts used logical materials of instruction and appropriate persons in the programs. Again, California was rated somewhat higher than Vermont, and site counterparts rated the items somewhat higher than did the experts.

Presentation. Respondents were asked to judge the development reports in relation to adequacy of description of participants, writing, and description of the planning processes which preceded the implementation of the programs. As can be seen on Table V-16, experts and site counterparts agreed that the reports dealt with these issues adequately with the exception of the experts' opinion that the Vermont team's description of the planning process was adequate but "with reservations."

Utility. Five statements were presented to respondents which dealt with whether or not the development program would be used by them, the degree to which the team approach was seen as a good idea, and whether there are more advantages than disadvantages to the programs and to the team approach. Table V-17 shows that respondents agreed to most of the items for the California

Table V-15

Teacher Educators' Judgments of the IR&DT Teams' Development: Resources

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
20. The materials of instruction (artifacts, people, texts, places, etc.) are logically related to the purposes and activities	1.5	1.5	2.5	1.0
21. The roles of persons engaged in providing the program are appropriate to the purposes and activities	1.5	1.0	2.5	1.0

Table V-16

Teacher Educators' Judgments of the IR&DT Teams' Development: Presentation

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
24. The report adequately describes participants in the program	2.5	1.5	2.5	2.0
25. The report is well written (grammar, syntax, punctuation, etc.)	1.5	1.5	2.0	2.5
32. The report adequately describes the planning process which preceded implementation of the program	1.0	1.0	3.0	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Table V-17

Teacher Educators' Judgments of the IR&DT Teams' Development: Utility

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=2)	Counterparts' Mean Scores (N=2)
26. I would use the program in work with preservice students	3.5	3.0	4.0	1.5
27. I would use the program in work with inservice teachers	2.5	2.0	4.0	1.5
30. The team approach to teacher education, as reflected in the report, is a good idea	2.0	1.0	2.0	1.0
33. I believe there are more advantages than disadvantages to the program as reported	2.0	1.5	2.5	1.0
34. I believe there are more advantages than disadvantages to the team approach to teacher education as reported in the document	2.0	1.5	2.5	1.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

report with the exception of having some reservations about the program's utility for preservice students. The Vermont report was not seen by experts as one which they would use with either preservice or inservice students, but the other items related to utility were responded to more positively. Again, ratings by site counterparts were more positive than those by experts.

Summary of teacher educators' judgments of IR&DT teams' development programs. Teacher educators, experts and site counterparts, judged the work of the two teams. In almost every instance, they were positive. Issues of purpose, activities, context, resources, and presentation were seen to be effectively dealt with by both IR&DT teams. Both teams' evaluation efforts, however, as reflected in written reports of the development program, were judged more cautiously by experts. Overall, the California IR&DT team's development program was rated higher than the Vermont team's. As was true for the researcher judgments, expert opinion was less positive than site counterpart opinion although, as has been stated, in most cases both sets of judges responded favorably to the development reports.

Teachers' Judgments of the IR&DT Teams' R and D Outcomes

Teacher experts and site counterparts were represented by seven people, three experts and two site counterparts nominated by each team. They responded to 29 items on the questionnaire designed to elicit judgments regarding the degree to which IR&DT research and development, as represented by the two teams' reports, is seen to be useful to teachers. Items are concerned with (1) relation to teachers/teaching, (2) utility to respondents, (3) utility to school systems, (4) originality, (5) presentation, and (6) evaluation. As with other role groups' responses reported earlier, the categories for teachers are presented below, each in turn. Discussion is in relation to each team's efforts separately. Data, however, are again presented on a single table for ease of comparison between the two teams.

Relation to teachers/teaching. Teacher respondents were presented with nine items designed to determine if the IR&DT teams' research and development would be considered useful and desirable by teachers. Table V-18 displays the

Table V-18

Teachers' Judgments of the IR&DT Teams' R and D: Relation to Teachers/Teaching

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
1. The research report treats an important teaching issue	2.0	1.0	2.33	2.0
2. Teachers I know would say that the research issue is one in which they are interested	1.66	1.5	2.0	2.0
3. The descriptions of teachers and teaching in these reports are believable	2.66	1.5	2.0	1.0
5. The research and development reports discuss teaching issues in which I am interested	2.0	1.0	1.66	2.0
8. The research and development reports gave me new insights into classroom issues	2.66	2.0	2.66	2.0
17. The influence of teacher concerns is apparent in the reports	1.66	1.0	2.33	1.5
18. The influence of teacher concerns is more apparent in the reports than the concerns of researchers or teacher educators	3.0	2.0	3.66	2.5
21. The findings of the research reports are believable in terms of my experience as a teacher	2.0	1.0	2.0	1.0
28. It appears from the research report that the classes and teachers studied were allowed to remain natural rather than altered radically for research purposes	2.0	1.5	2.0	1.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree;
5= Strongly disagree

responses to these items.

It can be seen that the California team's work was seen by respondents as important, interesting to teachers, credible, believable, and natural to both experts and site counterparts. The one item which was agreed to with reservations dealt with the degree to which teacher concerns were more apparent in the work than concerns of researchers or teacher educators. Although this might appear to be somewhat less than positive, it should be remembered that IR&DT rests, in part, upon the assumption that all three roles will be represented. The respondents agreed that teacher concerns were apparent in the reports. Therefore, the dominance of teacher concerns, if so perceived, would probably be interpreted as going against this assumption.

The Vermont team's work also was seen to be positively related to teachers and teaching. As with the California report, the experts did not believe that the Vermont work reflected teacher concerns more prominently than those of researchers or teacher educators. The strength of the disagreement, however, indicated that the teacher concerns were perhaps not as dominant as one might wish, even given the issue of parity among team members.

For both sites, the site counterparts' judgments were more positive than the experts' opinions, continuing the pattern which persists through this component of the judgment procedures.

Utility to respondents. As was true for researcher and teacher educator respondents, teacher respondents were asked to indicate whether or not, and to what degree, they would use general processes or products of the IR&DT teams' work and whether the reports provided them with specific findings or processes which they might implement in their own work. Table V-19 displays responses to these items.

Of all the groupings of items across the three groups of respondents, this

Table V-19

Teachers' Judgments of the IR&DT Teams' R and D:
Utility to Respondents

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
6. After reading the research report, I would be interested in participating in such research activities (though not necessarily with the same research problem)	2.0	2.0	2.0	3.0
7. After reading the development report, I would be interested in participating in such a set of activities	2.33	1.0	2.33	2.5
9. There are ideas in the research and development reports which I would like to try in my own professional life	2.0	1.0	2.66	2.0
11. The development program is one which I believe would be of interest to many of my teacher colleagues	2.66	1.5	3.0	2.0
13. There are elements in the research and development reports which I would like to try in my classroom	2.0	1.5	2.0	2.0
14. I learned something about teaching from the reports which I had not known before reading them	3.0	3.0	3.0	2.5
19. The development program compares favorably with my own experiences in inservice courses and/or activities such as workshops	2.0	1.5	3.0	1.5
20. The development program compares favorably with my own experiences in teacher education courses	3.0	1.0	4.0	2.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree;
5= Strongly disagree

set of responses was among the least positive. For California the tendency was for respondents to agree with the items but to agree less strongly and occasionally with reservations. While this tendency was pronounced for experts, it was only occasionally so for site counterparts.

For the Vermont team, the pattern noted above persisted with some difference. The experts were more reserved in their agreement than they were for California. The difference occurred when respondents were asked to compare the development program to those they had personally experienced. It is also interesting to note that site counterparts in Vermont, although more positive than the experts, were less enthusiastic than had typically been the case for other groupings of items.

Utility to school system. Three items related to school system research and development and to current practice were presented to teacher respondents. Table V-20 indicates that the experts believed that the processes of IR&DT could not be done in their school systems, although administrators might (with

Table V-20

Teachers' Judgments of the IR&DT Teams' R and D: Utility to System

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
12. The processes of research and development described in the reports could be done in my school system	4.0	1.5	4.0	3.0
15. The administrators in my school system would support such research and development in the system, at least idealogically	3.0	2.5	3.0	2.5
16. I know of specific systematic research programs currently (or recently) conducted in my school system by teachers	2.0	3.0	2.0	4.0

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

reservations) support such activity, and that there were systematic research programs going forward in their own settings. The site counterparts for California agree that such processes could be done in their system and that administrators would support it, but were less than positive about specific research currently being conducted in their settings. The Vermont site counterparts had reservations about whether IR&DT could be done in their systems, although partially agreeing that administrators probably would support such activity, but they did not agree that research was presently being conducted in their settings.

Originality. The teacher respondents were asked to indicate whether or not the IR&DT development programs were unique and "better" than those which they had experienced. Table V-21 shows that the California development program was agreed, with reservations, to be unique by the experts who also noted that the reports of this team were "better" than others which they had seen. Site counterparts noted that the development program was unique and did not respond

Table V-21

Teachers' Judgments of the IR&DT Teams' R and D: Originality

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
10. The development program described in the report is unique/original when I compare my own experience to those reported	2.66	1.5	3.66	2.5
22. The research and development reports are somehow "better" than others which I have seen	2.0	---*	3.0	2.0

*Neither person responded to this item

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

to the item regarding whether the reports were "better" than others.

Experts were less enthusiastic about the originality of the Vermont team's work and also had some reservations that the Vermont reports were "better" than others they had seen. The site counterparts for Vermont agreed to both items.

Presentation. Table V-22 displays responses to six items related to the IR&DT teams' reports in relation to presentation and sequential logic. It can be seen that the California work was perceived by both experts and site counterparts to be clear, understandable, readable, and logically related in terms of

Table V-22

Teachers' Judgments of the IR&DT Teams' R and D: Presentation

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
4. The methods used to gather data in the research report are presented clearly and understandably	1.66	1.5	2.0	2.5
23. In general, the research report is readable and understandable	1.66	1.5	2.33	2.5
24. In general, the development report is readable and understandable	1.66	1.5	2.0	2.0
25. There are no questions about the reports which are left unanswered for me*	3.0	3.0	3.0	2.5
26. The research and development reports are logically related to one another in terms of content and activity	1.66	1.5	3.0	2.0
27. The research and development reports are logically related to one another in terms of processes used by the team members.	1.66	1.0	3.66	2.0

*Item rephrased into positive stance to maintain continuity of scoring

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

its components. However, there were some questions which apparently were left unanswered for the respondents.

The Vermont report was seen as readable, understandable, and clear. There were reservations, however, about the relationships between the research and development reports in terms of content, activity, and processes. As with the California work, experts apparently had questions which were left unanswered by the reports.

Evaluation. Only one item was presented to teacher respondents which dealt directly with evaluation in the development programs. It can be seen from Table V-23 that experts and site counterparts agreed that the California development participants altered their behavior as a consequence of participation. In sharp contrast, the Vermont development program was seen as not providing evidence that participants had changed their behavior. This was a particularly strong response from the experts. In fact, it was the lowest rating of any item across the three groups of respondents.

Table V-23

Teachers' Judgments of the IR&DT Teams' R and D: Evaluation

Item	California Team		Vermont Team	
	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)	Experts' Mean Scores (N=3)	Counterparts' Mean Scores (N=2)
29. It appears from the development report that the participants altered their behavior (thoughts, feelings, actions) as a consequence of participation	2.66	2.0	4.0	3.5

Key: 1= Strongly agree; 2= Agree; 3= Agree with reservations; 4= Disagree; 5= Strongly disagree

Summary of teacher judgments of the IR&DT teams' research and development outcomes. The judgments by teachers of the teams' r and d efforts is, on the whole, positive although less so than the judgments by researchers and state educators. In terms of the experts selected by FWL, it should be noted that one of the three respondents was consistently more negative than the others. This explains the tendency for the averaged score to fall toward the "agree with reservations" or "disagree" response. The pattern of site respondents being more positively disposed to IR&DT work than experts, as noted with researcher and teacher educator respondents, is repeated with teachers.

In general, it can be concluded that teacher experts viewed the California team's work very positively in all categories with only a few exceptions. Reservations were expressed regarding the influence of teacher concerns as opposed to concerns of other IR&DT team members, the degree of interest of teacher colleagues in the development program, the qualitative difference between the development program and those experienced by the experts, and the comprehensiveness of the reports. For the Vermont team, strong reservations were expressed regarding the influence of teachers upon the work and the degree to which participants in the development program appeared to alter their behavior as a consequence of participation. Less strong reservations were expressed by teacher experts about the report's providing them with interesting and useful information for their own work, the interest level of the development to teacher colleagues, the originality and overall quality of the development program, and the relation between certain elements in the reports of the Vermont team.

Summary

This chapter has presented the judgment of the research and training/development reports for the two IR&DT teams in relation to both rigor and usefulness. For purposes of this judgment, rigor was defined as strictly precise, exact, accurate adherence to standards of excellence. Usefulness was meant to denote utility, or of practical use for supplying common needs.

Two processes were used for accomplishing judgment. Six juries of three persons each were organized, representing either teachers, researchers, or teacher educators/staff developers. Each jury looked either at rigor or at usefulness of the r and/or d for each team. Jurors were asked (1) to develop specific criteria for judgment in relation either to rigor or usefulness, whichever was their assigned construct for judgment, and (2) to apply these independently to each team's r and/or d reports, comparing each with what they perceived to be the norm for educational r and d in their experiences.

The second process involved use of expert and site counterpart representatives for each of the three constituent roles. Experts and counterparts responded to items on a questionnaire designed to elicit judgments from the points of view of national as well as site-specific perspectives. For this task, seven experts were nominated: two researchers, two teacher educators, and three teachers. Six counterparts from each site also were nominated, with two persons representing each constituent role.

In terms of evaluation by the jury process and in relation to rigor and usefulness, California's IR&DT team's research and/or training/development reports were judged (1) by researchers to be somewhat more rigorous than typical educational research, and (2) moderately useful in terms of contributing to research knowledge and theory development; (3) by teacher educators and/or staff developers to be slightly more rigorous than typical educational training programs; (4) by teachers to be greatly useful for application to classroom instructional processes; (5) by staff developers to be much more useful than typical educational r and d; and (6) by teacher educators to be very highly valuable, transferable with little or no change needed for adaptation, and cost effective and manageable. In addition, experts and site counterparts were positively disposed toward the California reports. Researchers' responses indicated agreement with positively stated assertions about the team's work in relation to their seven categories of evaluation. Teacher educators were similarly disposed, rating the California reports positively for their six categories of evaluation. Teachers likewise viewed the California efforts positively, expressing only few reservations in response to their six evaluation categories.

For the Vermont IR&DT team's research and/or training/development reports, both judgments by the six juries and ratings by the experts and site counterparts were less enthusiastic. In relation to rigor and/or usefulness, Vermont's reports were judged (1) by researchers to be somewhat less rigorous than typical educational research, and (2) scarcely useful for purposes of contributing knowledge or developing theory; (3) by teacher educators and/or staff developers to be almost as rigorous as the norm, or typical educational training programs; (4) by teachers to be not at all useful for classroom instruction; (5) by staff developers to be somewhat more useful than typical educational r and d; and (6) by teacher educators to be as valuable, as easy to apply to new settings, and to cost about the same as typical educational r and d. In addition, experts and site counterparts were somewhat positively disposed, but with reservations on the part of experts in relation to some items on the questionnaire. Researchers agreed, but with reservations, to their seven categories of evaluation; teacher educators agreed, but with some reservations, to their six categories of evaluation, and teachers agreed, but somewhat less positively, to their six categories. In addition, site counterparts at Vermont consistently rated the reports more positively than experts.

Generally, it can be said that (1) the California IR&DT team's research and training/development reports were judged to be both more rigorous than and more useful than typical educational r and d; (2) the Vermont IR&DT team's research and training/development reports were judged to be less rigorous and less useful than typical educational r and d; and (3) both team's reports were responded to somewhat positively on questionnaires submitted to experts and site counterparts representing constituent roles, but the California reports received consistently and slightly more positive responses by experts. Thus, it appears that the standards of rigor and usefulness for conducting educational r and d in the IR&DT mode can be met and exceeded given that the strategy is enacted faithfully as was the case in California. This observation provides the basis for further speculation in Chapter Seven.

CHAPTER SIX

IR&DT INTERVENTION: PROFESSIONAL DEVELOPMENT AND SCHOOL PROBLEM SOLVING

The dominant purposes of implementing IR&DT were to demonstrate an alternative mode of conducting r and d on teaching and to illustrate how that alternative mode is carried out when implanted in two representative school settings. During the months preceding the implementation period, it became apparent that IR&DT also could be conceptualized as a school change and professional development strategy in that new behaviors would be required of participants and modifications of "business as usual" would be required of institutions in which the participants held membership. Consequently, it was decided to monitor the degree to which IR&DT is, in fact, related to changes in people and institutions.

This chapter considers IR&DT as an intervention strategy: intervention in terms of (1) awareness of options and possibilities, (2) acquisition of knowledge and skill related to r and d, (3) professional collegiality, (4) participants' self-perceptions of professional worth, (5) educational cosmopolitanism, (6) utilization of knowledge, (7) action upon school problems, (8) alteration of professional practice, and (9) dissemination of information regarding the strategy itself.

In addition, certain problems were noted during the course of implementing IR&DT which should be acknowledged. Because these problems were found to be ones which historically have been related to change (intervention) efforts, they also are presented in this chapter.

The discussion which follows is derived from questionnaire data, logs kept by IR&DT team members, interviews with team members and other site representatives, audiotape recordings of formal team meetings, and direct observation.

(See Chapter Two for a discussion of the data collection procedures and Appendix C for samples of questionnaires.)

The conclusions reported herein regarding IR&DT as an intervention strategy are not necessarily drawn from data from every participant for every conclusion. What is presented are generalizations which are derived from responses from a substantial number of participants.

Awareness of Options and Possibilities

As has been documented by Bentzen (1974), it is often possible for change to occur if those who are engaged in the change believe that they, indeed, can make the change. That is, the belief that one's capability is positively related to achievement of an expectation, even when minimal skill exists relative to what is expected, is seen as a powerful predeterminer of whether or not an alteration in practice will occur. Throughout the IR&DT implementation period, it was observed that IR&DT team members believed they could accomplish the task of formulating and conducting high quality r and d related to teaching. Whenever substantive and procedural barriers were encountered there was a reemergence of the belief that "we can do it." Of course, for both teams there were numerous periods of frustration which, if observed only in terms of the realities of the situation, might lead one to conclude that IR&DT would be abandoned by participants. However, a sort of team-internal "Hawthorne effect" appeared to take over and the difficulties were overcome. It is believed that the increased awareness of the power of individual members of the group, in terms of contribution to the r and d effort, was magnified dramatically by the sustained team relationships which were present and applied to the accomplishment of the r and d tasks in both sites.

Although somewhat less pronounced for the California team, there was some hesitation on both teams regarding their ability to negotiate the changes required in a public school system in order to engage in r and d that involves teachers, a trainer/ developer, and a researcher. It is believed that teachers and schools are rooted in their own somewhat closed worlds with the walls of the classrooms and the boundaries of the school serving all too often as the acknowledged perimeters of both experience and possiblity. Participants in IR&DT, as a consequence of systematic r and d activities, moved beyond these conventional boundaries into worlds of practice they previously had not experienced, realms of ideas which they previously had not addressed, and systems of belief which were different from the ones which characterized their work lives. This extension of self appeared to open up arenas of possibility and promise which probably would not have been encountered in the course of a typical school experience.

For IR&DT teachers especially, the opportunities to observe other teachers in action as a part of validating their research questions and methodologies were seen as extremely positive experiences. Comments such as, "I didn't realize schools could be so different," "I was amazed at how other teachers seem to face the same problems I face," and "I think I'll try the technique I saw during the observation" were made during the implementation period.

A persistent theme regarding awareness was the growth of the participants' understanding of the complex world of the elementary classroom. For teachers who live daily in this world, one could conclude that this greater understanding also was related to heightened perceptions of how to act appropriately in that world. For researchers, the better understanding was reflected in giving extraordinary and sensitive attention to how to capture and describe better that world through data collection and other inquiry-related activites. For trainer/developers, the repertoire of possibilities for intervening into the worlds of students and teachers was increased.

Data from the IR&DT Study, then, indicate the power of IR&DT to (1) widen and deepen both individual and institutional understanding of r and d, of the real world of teaching and learning, and of the roles various people can play in finding ways to improve their work, and (2) increase the options for acting upon that understanding.

Knowledge and Skill Related to Research and Development

It was noted in Chapter One of this report that participation in IR&DT is not intended to turn teachers into researchers, researchers into trainer/developers, and so on. However, the implementation of the strategy at the two sites did appear to have an effect upon all participants' knowledge and skill related to r and d. It is clear that teachers and trainer/developers, for example, increased their knowledge about and skill related to research design issues. Further, it is clear that teachers and researchers became more skillful in the formulation and conduct of training strategies and programs. For all participants, as noted above, increased capability in analyzing and drawing conclusions about classroom life was evident.

On the basis of observation of behavior and self-report questionnaires, it can be concluded that all IR&DT team members altered their beliefs and practices related to research and development. This alteration, interestingly, was in two directions. Prior to engaging in IR&DT, participants were asked to rate their own skill levels in relation to teaching, research, and development. For teachers and trainer/developers, estimations of teaching and training knowledge and skills were relatively high whereas for research the estimations were very low. (These estimates were of specific knowledge and skills, e.g. ability to write unambiguous test items, knowledge of at least one theory of measurement, and so forth.) For researchers, as might be expected, the estimations of research skills were much higher than for the other two role groups. After participation in IR&DT, self-reports indicated that teachers, trainer/developers, and researchers believed that they had greatly increased their research skills and, for the most part, maintained their teaching and development skills at the level of entry into IR&DT. In addition, however, researchers, subsequent to the implementation period, were less certain of their research abilities than they had been prior to working through the IR&DT process. While it is possible that instrument reliability issues may have contributed to these changes in participants' views of their knowledge and skills, observation suggests that the differences are real. If it can be believed that the changes are real, it can be concluded that, on the one hand, IR&DT is a way for research-naive persons to understand and enact the research process better and, on the other, it is a way for researchers to better estimate, as a consequence of practice, what they know well and what they know less well, particularly in relation to conducting research in the real world of the classroom.

In a period in history when validation, accountability, and proof are looming ever larger as social demands upon school persons, the larger pool of research-knowledgeable persons developed by participation in an IR&DT effort should be a very positive force in and for schools.

One anecdote may illustrate this point. Following their work with IR&DT, the teacher members of the California team were mandated by the school district to adopt a new system for reading instruction. Historically, complaints regarding this mandate would take the form of conventional wisdom. Talk would center on whether or not the program was sympathetic to the teachers' styles, the degree to which the students "liked" the program, the fact that "we've never taught reading this way," and so on. In contrast, when the IR&DT teachers reacted to the mandated program, they requested "research data to illustrate the effects of the program on reading outcomes."

Professional Collegiality

Literature related to the school as an organization points to the isolation of teachers from one another, schools from other schools, and institutions of schooling from other institutions which have like or similar goals and functions. It has been pointed out that when teachers do get together formally, most typically it is to hear administrative decisions, work on schedules and procedures, etc. Rarely do such meetings engage teachers in sustained and serious talk about the issues of teaching and learning. Also, it has been noted that schools, even those within a single school system, are plagued with the problems of curriculum articulation, uniform standards and expectations, defining mutually supportive goals for instruction, and so on. This institutional problem is at its most pronounced, however, when one examines the relations between public elementary and secondary schools and institutions of higher education where, one would hope, common themes and concerns would promote coalitions of interest.

The implementation of IR&DT demonstrated some power to act on certain of these collegial issues. Most pronounced was the breakdown of institutional barriers between teacher members of the teams. It is believed that the focus of IR&DT upon problems/issues which concerned teachers combined with the sustained nature of maintaining and acting upon that focus over an extended period of time contributed to this decrease of teacher isolation. To a person, the teachers reported that a major advantage of their participation in IR&DT was increased understanding and knowledge of their colleagues' beliefs, practices, and expectations. As one teacher said, "What a wonderful difference from the usual faculty meeting or lunchroom talk." This sentiment was repeated in a variety of ways by all IR&DT teachers.

Another issue of collegiality addressed by IR&DT is the persistent isolation of one specialist from another. In the field of education, it is common for researchers to talk to researchers, teachers to teachers, trainers to trainers, and so on. Seldom do individuals interact across roles on issues which, it might be expected, are of interest and importance to all. While persons involved in such interactions might view the issue(s) from different perspectives, the combined sharing of perceptions and ideas has a high potential for bringing new insights, and perhaps improvements to the issue. IR&DT illustrated the possiblity for such interaction as well as the potential for that interaction to make some differences regarding the issues under consideration. A persistent theme in interviews and from direct observation was positive response to and benefit from differing role representatives meeting in common cause.

There is less conclusive information than might be desired regarding changes in inter-institutional relationships as a consequence of participation in IR&DT. Although two schools were represented on the California team, the geographical distance between them and the markedly different demographic characteristics of the settings appear to have interfered with promoting close institutional ties. The Vermont team, with representatives from a public elementary school and a university, demonstrated the possibility of bringing the resources of two institutions to bear upon a teaching problem. However, the evidence regarding the nature of that relationship is limited and inconclusive. What can be concluded is that when individuals of good will from the two settings come together, the institutional barriers in terms of status, ideological perspective, and historical precedent are largely ameliorated.

IR&DT, then, appears to have a strong positive influence upon teacher professional collegiality and inter-role collegiality but more evidence is needed to determine the strategy's impact upon inter-institutional relationships.

Self-Perception of Professional Worth

It can be fairly stated that all IR&DT participants had positive self-perceptions regarding their professional contributions prior to participation in the implementation of IR&DT. That is, it was apparent from initial interviews and from observations of behavior that the IR&DT teams were composed of persons who believed strongly that they were having positive effects upon their clients and upon their work places. Further, during the course of the IR&DT implementation and subsequent to its conclusion, participants expressed the belief that they had been part of something important and significant. They believed that IR&DT, especially in terms of process, represented a major breakthrough in conducting educational r and d. For example, from the beginning, teacher members of the two teams expressed their pleasure about being involved in activities that recognized them as experts rather than as subjects upon which others' wills and ideas were concentrated. As one teacher said, "It's great fun to be 'in charge' for a change. I feel like a real professional."

As was noted in Chapter Four, the commitment of time and energy was considerable for all IR&DT participants. It seems reasonable to assume that such an expenditure of limited human resources on IR&DT was, to a degree, a consequence of the participants' belief that the work to be undertaken was of personal and professional value.

As noted earlier, at the conclusion of the IR&DT implementation period, participants acknowledged that they had learned a great deal from the process and that learning had enhanced their views of themselves as professionals. It was interesting to observe that researchers and trainer/developers who might be assumed to be less susceptible to this kind of self-assessment as a consequence of their assumed status in the educational hierarchy, expressed such views along with the teachers. Specific examples of this phenomenon included statements such as, "I feel more in control of my professional life," "I realize that teachers can make a difference in what happens in education," "I now know that I can influence others without feeling afraid of manipulating them," "I've sharpened my research and communication skills to the extent that I think I can make sense of how to do classroom research," and so on.

Related to this sense of professional worth is the set of responses given by IR&DT participants when asked the question: "Would you do it [participate in IR&DT] if you knew then what you know now?" Every participant indicated that he or she would, indeed, volunteer to be an IR&DT team member. When asked why, the responses were similar to those noted above with the two dominant responses being that the experience was (1) a powerful professional growth opportunity and (2) a rare chance to come to know colleagues in a different and very gratifying light.

It can be concluded, then, that participation in IR&DT was perceived by IR&DT team members as a set of experiences that enhanced and strengthened their professional role orientations.

Educational Cosmopolitanism

As noted above, as a result of involvement in IR&DT, the participants increased their r and d skills and, as will be noted later in this chapter, they also appeared to alter their professional practices to a certain degree. These two categories of change have as their principal focus the direct and immediate professional orientation of the participants. In addition, there was evidence that participants became more broadly aware of the worlds around them. This broader awareness may be called cosmopolitanism.

Although more true for the Vermont than the California participants, there was a certain preoccupation in their work with the immediate, the nearby, and the at-hand rather than a "reaching out" to ideas and resources outside the well-understood environment. Somewhat aligned with the typical lack of awareness of options and possibilities discussed earlier, this preoccupation with what might be called the "dailiness" of schools is common in most school settings. Manifestation of this set of attitudes and behaviors often is evidence of a resistance to change because "we've always done it this way" or because "that won't work here."

However, while IR&DT team members originally displayed a certain degree of such provincialism, over time they were observed to reach out, in terms of ideology as well as potential practice, to resources well outside their accustomed professional worlds. An example of this change was the teacher who, upon first hearing of ERIC, did not comment. When the researcher had referred to the information system several times, she said, "I thought ERIC was somebody you know who could help us." The same teacher, in a log entry several months later, wrote, "I wish I had time to do an ERIC search on this topic. Well, maybe when we finish data collection."

In reflecting upon the IR&DT implementation in terms of events, experiences, etc., that might have contributed to increased cosmopolitanism, it is clear that the emphasis upon already completed research and development during the orientation sessions, as described in Chapter Four, promoted the norm of educational cosmopolitanism. As questions could not be answered within the IR&DT settings, the teams were observed to move outward for answers. The researcher on the California IR&DT team, especially, promoted this new norm during the early stages of the implementation. The California team members' logs indicated that he circulated professional journal articles and research reports dealing with their initial research questions and, further, that the articles were read and commented upon by participants. These comments ranged from "Heavy!" to "What a good idea. I think I'll try this one in my classroom."

Although it may be stretching the term a bit, there also were instances throughout the implementation period which reflected a growing cosmopolitanism regarding expectations for research and development. At first, participants appeared to believe that their own standards, however incompletely formed or articulated, were the only ones which mattered. Partly as a consequence of technical assistance and largely a consequence of growing research and development sophistication, more stringent standards for their own work began to be applied by the teams. Log entries and audiotape recordings of formal team meetings demonstrated a pattern of movement from "I think that's a good idea," to "Now, what are the analysis problems we could anticipate if we do it this way?" and "Has anyone else tried this?"

In summary, IR&DT participants' growth in educational cosmopolitanism was illustrated in examples of "outreach" from the immediate environment for resources and answers to specific questions, in the nature of the resources which were considered appropriate and acceptable to the team, and in the recognition that standards of excellence could be conceived of differently than was customary in the school settings.

Utilization of Knowledge

Based on what is known about educational innovation, it can be said with some assurance that schools and the people in them depend in large measure upon past practice and current conditions for data to inform decision making (e.g., see Goodlad, Klein, et al., 1974). This practice is related to the "closed system" argument presented earlier. Despite ever more sophisticated information storage and retrieval systems (e.g., ERIC), there is little evidence that these systems are used extensively by teachers and/or other school persons.

In contrast, as the IR&DT implementation moved forward, it was clear that the teams were more and more aware of the world of knowledge which, if needed, was available to them. Moving from a position which depended almost solely upon conventional wisdom to one which increasingly called upon educational r and d knowledge, the teams demonstrated the power of the IR&DT process to call into serious doubt the typical dependence of school personnel upon "business as usual" as a decision-making data source. It is believed that much of this change was a consequence of the combined influence of (1) researcher orientation to building upon research history, (2) technical assistance from Far West Laboratory and (3) National Advisory Panel (NAP) responses to and critiques of the IR&DT teams' research designs, training designs, and research and training reports.

Related to many of the changes already presented, but specifically to the use of knowledge, was the alteration in the language patterns of participants. Although each IR&DT team member could be considered to be articulate in a socially desirable fashion, the team talk which was related to issues of schooling and teaching was variously precise and clear for some participants and rambling and overly general for others. Audiotape recordings of team meetings at the beginning of IR&DT implementation illustrate the difficulties which many of the teacher members of the teams had when asked to describe critical classroom-based problems. Generic terms, often in the form of symptoms rather than underlying problems, were used rather than terms which communicated the problem with direct clarity. It was obvious that the early formal meetings for both teams, although less so for California than for Vermont, were exercises in miscommunication.

Terms such as discipline, attitudes, good citizenship, work habits, and achievement clearly meant different things to different people.

In this regard, it is interesting to note that at the IR&DT orientation sessions Far West Laboratory staff suggested that developing a lexicon would be a useful and helpful activity for the teams. Neither team did so, although there were repeated comments in formal meetings that it would be good to have one, that they really should get around to it, and so on. In retrospect, several team members noted the desirability of a lexicon for any future IR&DT teams. Also in retrospect, however, team members indicated that a certain resistance should be expected from otherwise articulate people when it was suggested that their language somehow may need to be improved.

The change in participants' language from the beginning to the end of the IR&DT implementation can be characterized as being (1) r and d specific and (2) school-related. In terms of r and d language, participants at first were uncomfortable with some of the conventions of language related to r and d such as "data were" but marked changes were observed at the end of the implementation with participants using appropriate r and d words and phrases with ease and precision. In terms of school-related language, as indicated above, audiotape recordings of initial team meetings revealed that some participants, particularly teachers, used phrases and terms with little specificity of meaning. Informal analysis of audio-recordings of meetings held in the last months of the project indicated that these same teachers were much more direct in their language, questioned others with more precision, and dealt with school issues both conceptually and specifically with greater clarity.

Thus, it appears from data collected during the implementation of IR&DT that participation in the strategy was related to changes in the orientation of participants, especially teachers, to the fund of existing r and d knowledge about teaching as opposed to conventional wisdom and to greater attention to school-specific and r and d-specific language clarity.

Action upon School Problems

Chapter One of this report called attention to the possibility that IR&DT, due to its school-based orientation, might be an agent for the solution of school problems. Precedents for this possiblity were seen in the action research movement in prior decades. It was informally hypothesized that if teacher members of IR&DT teams were considered the source of the research issues to be treated, those issues being located in school settings, significant attention would be given to school problems.

The implementation of IR&DT reported herein provided some limited evidence that this informal hypothesis was upheld. The most striking example, of course, was the California IR&DT team's r and d which had as its focus classroom interruptions and teachers' coping strategies related to them. As can be seen in the California r and d reports (see Appendix A), the team noted the persistence of this school problem as it related to student achievement or lack of same. Building upon prior research which supported student time on task as a significant learning variable, the team documented the nature and frequency of both interruptions and teacher responses to interruptions. Further, during both the research phase and the development phase of the strategy, the California team provided opportunities for participants to alter their teaching practices based upon findings. This issue, classroom interruptions, is pervasive in schools in general and, as evidenced through the California IR&DT team's question validation procedures, is perceived as an important instructional problem in the San Diego setting. The California team, then, demonstrated the way IR&DT can influence school problems.

The Vermont team's IR&DT work, on the other hand, treated a much less widely-held belief about a school problem and a problem area with a much less well established research base. Although one of the Vermont variables was considered to be of general importance (supportive instructional behavior by teachers), the relation of this variable to the difficult-to-operationalize variable of "mood" made the Vermont IR&DT work less related to persistent school problems in general than the California efforts.

On the other hand, if the issues of teacher isolation, use of knowledge, etc., are conceived of as problems which school persons face in the enactment of their professional roles, IR&DT impacted upon school problems in both settings.

Again using the California work as support for considering IR&DT as a school problem solving strategy given this perspective, the manner in which a school system formulates and implements a program of meaningful inservice education is an acknowledged problem. The development work of the California team was adopted by the school system and is presently (June 1979) in its third training cycle with full participation by teachers from throughout the district for each cycle. In fact, California IR&DT team members and site representatives report that teams of teachers regularly "crash" the courses which have limited enrollments because of the feedback and observational analysis requirements of the training. The director of inservice education strongly states that the demand exceeds the supply for this series of opportunities for professional growth of teachers.

Further, processes of IR&DT (e.g., team formulation of r and d problems, methods and procedures, systematic data collection, feedback to participants, etc.) are seen by San Diego school officials as having the essential elements of a positive model for "good" inservice education. The officials assert that such a model would be desirable as a major alternative to the conventional manner in which professional development opportunities are offered to teachers and others in the system. Currently attention is being given to instituting such a model in the San Diego school system at large and to installing it, or some modification of it, in individual schools. For example, the principal of School I, described in Chapter Three, has said that he would like to use IR&DT as a professional development vehicle for the school to which he has been reassigned.

Another example of the potential relation of IR&DT to school problems is a less conventional one. In the university setting from which the Vermont IR&DT researcher and trainer/developer were selected, there is some concern expressed by faculty and officials regarding the nature and extent of the faculty's research activities. The typical research tends to be conventional "library" research or an extension of school-based evaluation research. Several school of education officers and faculty members have expressed the desire that IR&DT, as an alternative r and d strategy, be implemented as a desirable norm for faculty research and for perservice education programs. There is not, as yet, evidence that this norm has been introduced, however.

It can be concluded, then, that IR&DT can act upon school problems, as in the case of the California team's work, but that this should not be expected to occur without special attention and emphasis being given to selection of critical school/classroom-related problems and to extension of the team's work to the larger context of the institution(s) involved. It also can be said that IR&DT acts upon school problems when issues regarding the professional orientations and growth of school persons as well as classroom-based issues of teaching and learning are considered as problems. Further, the processes inherent in IR&DT, as opposed to the focus of the r and d, relate to and impact upon school problems, as evidenced in the California system's inservice education program and the potential for implementation of the strategy at the University of Vermont.

Alteration of Professional Practice

Thus far, this chapter has dealt with the orientations of persons toward their own work. That includes the language used to describe practice, the ways in which persons relate to one another, the information, instructions, and options of which participants are aware, and so forth. Specific examples have been provided of increased knowledge and skill regarding r and d. In addition, data exist to support the conclusion that teachers, trainer/developers, and researchers become better at their respective professional roles as a result of participation in IR&DT.

As reported earlier, the researchers on the California and Vermont teams reported that they increased their research knowledge and skill and became more perceptive about their already-acknowledged r and d skills during the course of IR&DT implementation. In a like manner, teachers and trainer/developers responded to questionnaires in such a fashion that analysis revealed that they, too, believed they were more knowledgeable about and skillful in those professional functions which were directly related to their roles in addition to what they learned about formulating and conducting research.

Teachers on both teams acknowledged the impact of IR&DT upon their teaching. This impact took several forms. First, the process of validation of the research questions and for the California teachers the collection of data in their classrooms made them more aware of their own practices and called into question the appropriateness of those practices. With only one exception, the teachers indicated that they either had radically changed or slightly modified certain of their teaching strategies as a consequence of greater knowledge of their own behavior. (As has been reported, both teams used qualitative data collection procedures. The transcribed protocols from the research study itself in California and from preliminary observations at the beginning of question generation in Vermont were seen by teachers as instrumental factors in their increased awareness of their teaching behaviors.) Second, the interaction with others on the team was seen by teachers as making them more tentative in their estimates of their own effectivenss. That is, the questioning, probing, and exploring of teaching issues created an opportunity for them to see themselves in relation to others whom they liked and admired. There were numerous examples in the teachers' logs which indicated that team membership contributed to this self-reflection and, often, action upon practice. Third, as has been noted earlier, team members became more aware of research findings as a consequence of exploring studies that were related to the teams' r and d efforts. Teachers acknowledged that this exploration of what had been found out by others also was a cause for reconceptualizing their own behavior in the classroom.

Another level of response regarding IR&DT and alteration of practice was the reiteration by teachers of such comments as "I'd better think this through again," "I wonder if I could be classified as that kind of teacher?," and "Do you suppose the kids see me that way?" While not directly indicative of change in practice as conventionally conceptualized, this reflective mode is not believed to be typical of teachers (or, for that matter, other professionals). IR&DT, consequently, appears to be conducive to the adoption of a more reflective stance regarding practice than might be expected.

Changes in practice also were reported by the researchers. In particular, they indicated that they became more aware of, sensitive to, and skillful in the requirements of research methodologies with which they were unfamiliar prior to participaton in IR&DT. The decision by both teams to engage in research which had a qualitative element required researchers to become more knowledgeable about the problems and possibilities of qualitative data collection methods, analysis systems, etc. Also, researchers reported that they were required to sharpen those skills they already possessed in order to handle the complexities imposed by teachers' concerns.

Trainer/developers on the two teams also noted that they modified their practices as a consequence of participation in IR&DT. For example, the second Vermont trainer/developer's professional orientation was toward a rational, empirically-oriented training design. She reported that while she was still sympathetic to such a design, at the end of the IR&DT effort she had developed respect for and skill in less behavioristic models for providing training opportunities for teachers. The California trainer/developer, more eclectic in his approach than his Vermont counterpart, reported that he had become more systematic about his work and more convinced that the team approach to development was "the way to go." (It is largely through his and the California researcher's demonstration of IR&DT to school system officers that the strategy appears to have gained such strong support at the local site.) Both trainer/developers reported that they were enthusiastic about the IR&DT strategy and had incorporated many of its elements into other areas of their work.

Based on this initial demonstration of IR&DT, therefore, it can be concluded that IR&DT influences the professional practices of participants in the form of skill demonstration, awareness level, beliefs about appropriate behaviors, and reflection upon practice.

Dissemination of Information

At the beginning of this chapter, it was noted that the dissemination efforts undertaken during the course of the IR&DT Study would be discussed here inasmuch as they represent one type of intervention outcome. This discussion follows.

Early in the implementation period, Far West Laboratory staff deemed it advisable to "protect" the two teams from outside pressures in the form of response to requests for information about IR&DT. Nonetheless, from the beginning of their implementation efforts through to the conclusion, IR&DT team members received requests for visits, written reports, and program participation. Typically, these requests were forwarded to Far West Laboratory for response. Certain of them, however, were the cause of intensive participation by IR&DT team members. Also, toward the conclusion of the implementation period the Laboratory initiated some dissemination activities in which team members participated. These activities can be considered to be intervention or professional growth opportunities for the participants as well as for those professionals in the field-at-large who became acquainted with the strategy through these contacts.

After several requests for information regarding IR&DT had been received at Far West Laboratory, it was decided that an IR&DT Newsletter would be an appropriate way to communicate the ideas inherent in the strategy to the broader educational community. Consequently, during the study three issues of a newsletter were distributed to teacher educators, researchers, teachers, and others who, it was believed, would have an interest in IR&DT. Each newsletter was informational in nature and contained a lead article related to IR&DT, e.g. rationale, findings regarding schooling as a consequence of the IR&DT Study, a response to the notions underlying the strategy from a teacher educator, information about the participants, e.g., teams, NAP, and settings, and so forth. The newsletters were mailed to approximately 500 persons. One additional newsletter remains to be distributed that reports the outcomes of the study.

As a function of the network of persons who are engaged in research on teaching specifically and education generally, visitors to Far West Laboratory who expressed interest in IR&DT served as another information dissemination channel. Generally, these persons were put in contact with one of the principal investigators for the IR&DT Study or the director of that part of the Study focusing on IR&DT implementation at the two sites. Although the visitors were asked to maintain the privacy of the teams and to refrain from broad discussion of the implementation until the final report was completed, the teams gained some visibility through these contacts.

Several professional conferences provided additional opportunities for Far West Laboratory staff and IR&DT team members to discuss IR&DT. The 1977 meeting of the Association of Teacher Educators featured the IR&DT strategy as a way to develop curriculum. The 1979 meeting of the American Educational Research Association presented a session on IR&DT with Laboratory staff and members of the California team as participants. The 1979 meeting of the American Association of Colleges of Teacher Education included IR&DT with staff from the Laboratory and members of the Vermont team as participants. A conference on the arts in education sponsored by CEMREL and the Aspen Institute for the Study of the Humanities included presentations by Laboratory staff and a California IR&DT teacher. Laboratory staff and the California team reported on the IR&DT Study at the annual meeting of the National Staff Development Council. A meeting on research in teacher education at the University of Texas R and D Center for Teacher Education provided further opportunities for Far West Laboratory and California team member participation.

Less formal presentations regarding the strategy were made study at the University of Hawaii, the Metropolitan Schools Study Council, the Horace Mann-Lincoln Institute, and Teachers College, Columbia University by the director of that part of the IR&DT Study focusing on implementation.

In the future, it is anticipated that the IR&DT Study will be documented in a university press publication.

From this brief discussion, it is apparent that to date, dissemination of the IR&DT strategy, per se, has been limited. This reluctance to spread the word broadly arose from an early decision to insulate the teams from outside pressures as much as possible rather than from lack of enthusiasm about the strategy itself. While the original conceptualizers of the strategy expected that it would meet the assumptions on which it was based, the strategy called for sufficient change in the conduct of r and d that skepticism and doubt on the part of others were anticipated and completion of the IR&DT Study was considered an essential antecedent to large scale dissemination.

Problems of Implementation

As was noted at the outset of this chapter, certain problems arose during the course of IR&DT implementation. These problems, it was acknowledged, tended to be ones which usually have been associated with professional development and school change efforts. They are presented here as an aid for future application of the strategy and as suggestions for improving IR&DT as an intervention strategy.

Time and Timing

By now, the reader of this report is aware of the time demands placed upon IR&DT participants. Teachers who usually are involved with students for the large part of the day are expected by the IR&DT strategy to add participation in the team meetings to their energy expenditure. Researchers who have other institutional responsibilities are asked to revise their activities to include

IR&DT-related practices. Trainer/developers who have the responsibility to carry out professional development programs must add the duties of IR&DT team membership. It is acknowledged that time becomes a problem for team members, particularly for teachers.

In this regard, it is interesting to note the persistence of the conception of the teacher as "one who meets with students." When the teacher is not meeting with students, he or she feels that he or she somehow is not "teacher" in the conventional sense. In the IR&DT implementation, teachers, for the most part, were unwilling to take time away from teaching to participate in IR&DT work but were willing to add team work to their already crowded after-school and weekend schedules. Only after several observations of other classrooms and all-day team meetings had been experienced were teachers enthusiastic about giving up some of their classroom time to IR&DT. The rationale behind the change in orientation that occurred appeared to have two components. First, and most important, observations of other classrooms provided the teachers with useful insights about teaching generally. That is, the observations, while planned to inform the IR&DT process, also were seen as ways to improve practice and, therefore, could be justifed. Second, productivity of the teams was increased. Both teams engaged in all-day weekend meetings as well as after-school and school-day meetings. Clearly, the pattern most preferred was an all-day weekend meeting. Time, however, was a persistent problem for all.

In regard to timing, it is important for those engaged in school change efforts to understand that every institution and, consequently, every institutional member has an ingrained rhythm. School vacations, pay periods, lengths of instructional units, and so forth are set into the norms of the institution. When several institutions work together these rhythms often are in conflict and mitigate against achieving harmony. During the implementation of IR&DT, it became apparent early on that Far West Laboratory's contract cycles were different from those of local school systems, that school system cycles were different from those of the university, and that NIE cycles did not correspond with any of the others. The problems which were created (payment schedules, contracts, subcontracts, consistency of communication, etc.) were not unsurmountable but did divert time and energy from the enactment of the IR&DT strategy itself (for example, see administration associated aspects of technical assistance as reported in Chapter Four).

Building on the above notions, there are certain procedural and substantive norms that can be observed in any institution. To push against these norms is to cause problems. During the IR&DT implementation period, it was noted that however careful FWL might be in regard to being sensitive to these phenomena, certain negative consequences were manifest. Primarily procedural, the difficulties of assuring that teacher members were properly reimbursed for out-of-school activities, obtaining approval for equipment purchase, coordinating communication lines between institutions, arranging schedules which did not conflict with special events in the various institutions, etc., were encountered again and again. It is believed that these procedural difficulties did not influence negatively the implementation of IR&DT but when initiating another IR&DT effort, it should be realized that they were persistent and at times difficult to negotiate.

Participant Characteristics

For the Vermont team, a major difficulty was the role confusion and subsequent resignation of its original trainer/developer. Although this one example may be considered minimal in terms of impact, it must be acknowledged that IR&DT

participants should be selected according to role-specific (as well as more personal) criteria. Although it was known prior to the implementation period that the Vermont trainer/developer had a strong, almost exclusively humanistic orientation, the extent to which this orientation mitigated against what might be called a more technical enactment of r and d was not known until the implementation was undertaken. Further, both Vermont trainer/developers had difficulty changing from a role in which they "told teachers how to teach" to one in which they participated with teachers in analysis and understanding of what was occurring in their respective classrooms. It is believed essential that participants possess, to as high a degree as possible, the characteristics noted in Chapter One in order to promote successful IR&DT.

Orientation

As described in Chapter Four, the orientation to IR&DT was designed to accomplish several objectives believed to be important to successful implementation of the strategy. Participants, in final interviews, noted that the orientation sessions had been too comprehensive and too tightly scheduled for in-depth understanding of the issues under consideration. It was recommended by team members that the orientations be longer in duration (up to five days) and include more opportunites for reflection on and whole-group discussion of the new concepts and procedures that were presented.

Another difficulty regarding the IR&DT orientations, in terms of team members' perceptions, was that they essentially were self-contained in terms of time and place. Several participants suggested that after the initial orientation, subsequent reviews and reorientations should be conducted some weeks into the process whereby specific problems and issues could be resolved.

Communication

Technical assistance, it will be recalled, was offered to the teams. This technical assistance took three forms: written, oral via telephone, and on-site. According to team members, the telephone communications were by far the least satisfactory, even when in the form of a conference call, due to the impersonality of the telephone and the possibility of misinterpretation of messages. Most satisfactory to the team members were the on-site discussions between teams and Far West Laboratory staff. These opportunities, it was believed, were most powerful because of the possibilities to deliberate together, to allow some reflection upon what was going on, and to engage in discussion in depth.

Sequence

Closely related to the difficulties of time and timing is the issue of the scheduling of IR&DT. In the implementations reported herein, IR&DT began at about the same time as the school year. This, according to participants, was a mistake. They called attention to the necessity to get the school year "off to a good start" and the necessary expenditure of time and energy on this objective, particularly for teachers. It was noted that the crucial period of question identification and research design formulation coincided with an equally crucial period of classroom life. On the other hand, the beginning of school was cited as central to several important questions they might have considered. Therefore, team members recommended that IR&DT start in the spring with orientation and initial question formulation so that question validation could be accomplished prior to the close of schools for the summer period. Then development and critique of the research designs could take place during the summer with data collection beginning in the fall. In addition, it was recommended that the overall time span for IR&DT be extended from fifteen months to twenty-four months so that the pressures of time and timing could be better accommodated.

Core Group

As was noted in Chapter Three, School II had only one team member participating with the three teachers from School I in the California IR&DT efforts. This teacher pointed to the importance of having someone close at hand in the school setting with whom to communicate and from whom support could be gained. Other teachers on both teams noted the benefits which accrued from having team colleagues nearby and, consequently, the efficiency which such closeness promoted. The isolated teacher, according to her own reports, was somewhat overcommitted to non-IR&DT activities but, she believed, probably would have overcome this difficulty more easily had she had an on-site school colleague as part of the IR&DT team.

Expectations of Commitment

Each team engaged other teachers in its research and development. That is, in addition to the IR&DT team teachers, other teachers were selected to act as research subjects and inservice education participants. The IR&DT team members questioned the degree of commitment of these additional teachers. With few exceptions, the teachers who were not on the original teams were seen as not exhibiting the level of commitment of the original teachers. Of course, this could have been expected. However, the IR&DT teachers were anxious about this difference. It is believed that IR&DT teams should be helped to recognize that long-term, in-depth involvement promotes ownership and high participation and that they can only expect equal levels of commitment across participants if the nature of participation also is relatively equal. Tier II and Tier III teachers, as the teams referred to them, should not be expected to become as committed to the resolution of the problem under study or show as much professional growth as persons who work with the IR&DT team throughout the entire r and d process. This being the case, additional attention needs to be given to ways to expand the ways persons can be involved in IR&DT from question generation thorough completion of the research and training efforts. For example, while the core team probably should not increase in size to any large extent, other teachers (e.g. Tier II and III teachers) could serve as information and review sources throughout the effort rather than entering mid-way through or near the end of the process.

External Critiques

As noted in Chapter Four, the NAP provided critiques of the research and development designs and final reports for both teams. Also as noted there, the two IR&DT teams believed that these critiques would have been more effective if they had allowed for a period of reflection and then a sustained discussion of the nature of the recommendations and appropriate responses to them. As it was, the critiques of the research design left little time for either reflection or interaction with the Panel members but depended upon written response from the teams after the NAP members and team representatives had gone their separate ways. Also, in regard to critiques, it was noted that NAP members tended occasionally to offer differing points of view which the teams had difficulty resolving. It was noted that when Far West Laboratory staff synthesized the development design critiques, ameliorationg the inherent differences among the NAP reviews, the team members found interpretation and application of the recommendations less difficult and more efficient.

Conclusion

This chapter presented findings related to professional development and school problem solving as a consequence of the implementation of IR&DT and concluded with a discussion of certain problems which emerged during the implementation. It was noted that these findings were based on self-reports, questionnaire responses, and direct observations. In this discussion, there has been no attempt to "stretch" the available data from single participants to cover the others who were engaged in the process. Findings are based on data that included most, if not always all, of the participants. The conclusions, then, reflect the effects upon and opinions of either all participants, participants within a particular team, or large numbers of all participants.

Based on these findings, IR&DT appears to have served intervention, as well as r and d, purposes.

The next chapter discusses the principal conclusions drawn from the information presented in this chapter and in Chapters One through Five, suggests relationships between and among these conclusions, and advances recommendations which have emerged as a result of the IR&DT Study.

CHAPTER SEVEN

CONCLUSIONS

This report has presented the findings of a study of the IR&DT strategy. As was discussed in Chapter One, IR&DT is proposed as an alternative to the linear r and d strategy commonly applied in conducting educational r and d. The essential features of this strategy and the assumptions on which it is based also were presented in Chapter One. They build from the view that participative r and d strategies which include teachers are needed in the field of education and that participation of teachers in the entire r and d process will better insure that r and d outcomes will be seen as valid, relevant, and useful by practitioners as well as by researchers.

The IR&DT Study was undertaken (a) to investigate the process of implementing the strategy in order to identify and describe the requirements and characteristics of "successful" IR&DT, (b) to determine whether the strategy would produce r and d outcomes that could be useful to practitioners and at the same time meet commonly accepted r and d standards, and (c) to determine what, if any, changes in persons and institutions might result from participation in an IR&DT effort.

Chapters Three, Four, Five, and Six reported the findings from the Study. The purpose of this chapter is to summarize what was learned. To do so, the findings relative to implementation of IR&DT at the California and the Vermont sites are discussed in terms of the extent to which the essential features of IR&DT were achieved at each site, the extent to which the findings support the assumptions which served as the premise for creating and implementing the strategy, the cost effectiveness of IR&DT, and interrelationships among findings and the implications these have for "successful" implementation of the strategy. Finally, recommendations are given for future use of IR&DT.

Extent to Which the IR&DT Teams Achieved the Essential Features of IR&DT

Chapter One advanced six essential features of IR&DT which, it is believed, are basic and central to the strategy in that they provide the conceptual "wholeness" necessary for the successful accomplishment of this alternative to conventional, linear r and d. The features speak to (1) research and development team composition, (2) the nature of collaboration, (3) the problem-solving focus of the strategy, (4) conducting concurrent r and d, (5) maintaining the integrity of the classroom, and (6) recognition of IR&DT as an intervention as well as an r and d process. Paraphrased, these elements suggest that IR&DT is in place when a team composed of researcher, trainer/developer, and teacher(s) works within a collaborative mode toward solution of and action upon a verifiable classroom problem, with each team member contributing his or her unique professional skills without disturbing the "naturalness" of the setting in which the problem is located. Further, successful IR&DT provides professional and institutional benefits for the persons and organizations involved in the process.

The next several pages present a discussion of the degree to which the essential features noted above were observed to be present during the implementation of IR&DT by the two teams involved in the IR&DT Study. As noted earlier, the discussion is informed by findings presented in Chapters Three, Four, Five, and Six of this report.

Research and Development Team Composition

As was pointed out in Chapter Three, the two IR&DT teams deliberately were composed of persons whose training and experiences supported their nominations as teachers, researchers, and trainer/developers. However, at the time the teams were constituted there was no systematic attempt at identifying, prior to selection, knowledge and skills each team member possessed relative to his or her respective professional role. The primary interests, in terms of selection, were professional preparation, current role descriptors, positive response to the general conceptualization of IR&DT, and some limited evidence which, at least initially, suggested ability to engage in collaborative, classroom-based r and d.

Figure I-1 (page 9 of this report) specified the role contributions to IR&DT which were hypothesized as being necessary for a successful team. During the implementation period, it was observed that the contributions which are knowledge and skill oriented were indeed present in both teams, although in varying degrees.

The teachers in both settings, California and Vermont, demonstrated knowledge and skill related to teaching. However, based on implementation findings, it is believed that the California teachers were more aware of and sensitive to the complexity of the classroom environment than were their Vermont counterparts. To some extent, this difference may be explained by the institutional contexts in which the teachers worked. The California teachers had experienced the benefits and frustrations of working in a large, urban, multidimensional school system with a long and sustained history of professional development activities, special school improvement projects, and other opportunities to extend and deepen their understanding of classroom practice. The Vermont teachers were members of a significantly less complex school system which included only one school, provided few inservice opportunities, and isolated the teachers from other professionals. Further, it will be recalled that the three Vermont IR&DT teachers comprised three-fifths of the entire faculty of the school in which they taught. Nonetheless, both groups of teachers demonstrated awareness of and sensitivity to the problems that could arise when classrooms were entered for the purpose of conducting research on teaching, and used these insights artfully during the course of IR&DT implementation.

Regarding the researchers, Figure I-1 suggests that they should be knowledgeable about and skillful in approaching the conduct of educational research in a broad and multidimensional manner. Although it is not known what of their prior experience or training contributed to the difference, the California researcher was found to align more closely with this criterion than was the Vermont researcher. One explanation may reside in the combined power of recency of advanced doctoral study at a graduate institution known for its research strengths and the requirements of the current institutional workplace. The California researcher completed his doctoral dissertation during the course of IR&DT implementation whereas the Vermont researcher had completed his graduate work some time prior to his participation in the project. Also, the California researcher, by virtue of his position in the school system, was regularly engaged in studying the complexities of teaching and learning whereas the Vermont researcher had been more immediately involved in the formulation and demonstration of a model teacher education program. However, it is important to note that both researchers demonstrated the desired combination of (a) willingness to move beyond already-known research paradigms and technologies and (b) effectiveness in sharing their acquired knowledge and skill with other team members.

The trainer/developer on an IR&DT team is expected to demonstrate knowledge and skill in the application of research outcomes and methods to training programs and to be aware of ways to deliver training processes and products to potential client groups efficiently and effectively. As was noted in Chapters Three and Four, the original Vermont trainer/developer resigned during the third month of IR&DT implementation and was replaced by another who was selected as a consequence of team deliberation. The original trainer/developer was observed by Far West Laboratory staff and by team member colleagues as being confused about his role on the team, persistently lacking in focus for his work on IR&DT, and, to a degree, in a position of rivalry with the team's researcher. It is believed that this combination of behaviors was contributory to the somewhat less-than-systematic movement of the team toward a clearly defined objective for its research and development. On the other hand, the trainer/developer who replaced the original person can be characterized as task-oriented, supportive of colleagues, and persistent. When these behaviors replaced those of the first trainer/developer, there was a marked positive shift in the nature of the team's interactions, indicating the importance of attending to behavior patterns beyond those of a purely professional nature during the selection of IR&DT team members. Except when specifically noted, subsequent discussion of the trainer/developer role contributions includes only the second Vermont trainer/developer who remained with the team until the completion of IR&DT implementation.

It is believed that both the California and Vermont trainer/developers demonstrated the positive contributions to IR&DT that are specified for the role, although different vantage points and different emphases were exhibited by each. The California trainer/developer had taught eleven years in elementary schools and experienced five years as a curriculum resource teacher, all of these experiences taking place in San Diego. This accumulation of understanding regarding the problems and issues in that school setting is seen as having had positive effect in terms of the trainer/developer's knowledge of the system at both conceptual and strategy levels. The Vermont trainer/developer, although working in several school districts in a cooperative teacher education program which provided preservice students experience in public school programs, had as her primary workplace a university school of education. Thus, she was at least one step removed from the issues and problems faced daily by the teachers and others in the school systems with which she interacted. These, differences in the trainer/developers, essentially institutional in nature, are believed to be related to the degree to which they were knowledgeable about and sensitive to the perceived reality of classroom teachers. There is some evidence to suggest that the California trainer/developer was more closely aligned with these perceived realities.

Although both trainer/developers demonstrated a repertoire of understandings related to teacher education, as evidenced in observed behavior and self-reports the California trainer/developer appeared to have a more eclectic and less well-defined approach to training than his Vermont counterpart. The Vermont trainer/developer, by conviction based upon prior experience and training in special education, was more firmly disposed toward a single paradigm for training. This might be called a rational-empirical model dependent upon specification of outcomes prior to instruction, linearity of planning and execution, and accumulation of evidence related to the accomplishment of specified objectives. Although she appeared to become more flexible and accepting regarding other training models during the course of the IR&DT implementation period, there were repeated attempts on her part to recast the team's decisions regarding training into the rational-empirical framework.

Despite the distinctions noted above, it is believed that the two trainer/developers did, indeed, meet the requirements of the role specifications outlined as essential.

Thus, it can be concluded that the two teams engaged in the implementation of IR&DT met, in varying degrees, the specifications for contribution to the team's r and d. The degrees of difference are explained, at least speculatively, as consequences of institutional affiliation, complexity of organizational surround, prior experience in like and/or unlike activities, recency of like and/or unlike experiences, depth of understanding of the perceived reality of classroom practitioners, and initial personal interpretations about what role functions were most appropriate for IR&DT.

Further, it should be remembered that the knowledge, skill, and respective role function requirements of IR&DT were introduced to the team members in some detail during three-day orientation sessions immediately prior to the implementation of the strategy. Hence, based upon the findings reported in the discussion of the orientation meetings in Chapter Four, it must be concluded that the participants' characteristics prior to entry into the project were, to a degree, influenced by these sessions. Based on the data collected at the time of orientation, it also is possible to state that the two teams, as collectives rather than as individuals, initially were somewhat different entities. The California team, from the beginning, appeared to be what might be labeled a "businesslike" group and the Vermont team a more "social-personal" group. (This is not to imply that the California team did not display personal regard for members, only that such behavior was neither as frequent nor as prominent as for Vermont.) Attention to social-personal interaction and concerns by the Vermont IR&DT team was especially influenced by the original trainer/developer. When he was replaced by a more task-oriented trainer/developer the presence of the new trainer/developer combined with pressures to complete a research design that was acceptable to the National Advisory Panel for IR&DT, brought about a marked shift in the team meetings toward systematic use of the knowledge and skills of members. Given these findings, it is possible that the differences in the two teams regarding the achievement of role requirements rests, in part, upon the Vermont team's relative lack of opportunity to discover which role functions were most appropriate for IR&DT because a large portion of the team's time and energy, particularly during team meetings, was expended on other, more personally-oriented issues for the first several months of the project.

Collaboration

Chapter One presented as an essential feature of IR&DT the notion of collaboration. Collaboration was hypothesized as being present when there was parity among team members, equal responsibility in working through the r and d, working with as opposed to working on teachers, assumption of work by team members based upon their role expertise, assistance across roles as tasks were identified, and emergent or issue-specific leadership as opposed to designated or appointed leadership.

It was reported in Chapter Four that there was evidence of parity among team members at both sites. Parity was described as the ability to gain the attention of the group with equal ease by all team participants. Findings were presented which demonstrated that, within the broad rubric of parity, researcher members of both teams were likely to participate more extensively in team meetings than other individual team members because of their knowledge and skill related to research methodologies. However, when teacher representation on the team was viewed as the product of all teachers representing one role function, the teacher input was higher than that of the researcher or trainer/developer. Regardless, the implementation of IR&DT demonstrates that the need for role expertise may be at odds with a simplistic notion of parity. For example, as suggested above, to deny team members the opportunity to learn from and react to the researcher during the research phase of their work only to maintain some equality, in terms of time and attention, would have been senseless. Parity had to be considered in concert with the needs of the team. Given this expanded view of parity, it is believed that both the California and Vermont

IR&DT teams attended systematically and sensitively to the issue of parity while at the same time acknowledging the need to provide for inclusion of certain "role" member skills when they were of potential utility.

Regarding responsibility for equal assumption of role-related functions in dealing with r and d problems, the two teams appeared to demonstrate different patterns of behavior. Chapter Four presented information which suggested that the California team was more participatory than the Vermont team in terms of r and d relevant interactions, whereas both teams were participatory in dealing with the issues of collegiality and what might be termed personal support. Analysis of formal team meetings, interviews with participants, and analysis of correspondence indicated that the Vermont team depended to a considerably larger extent than the California team on the assumption of responsibility for the r and d designs and final reports by the researcher and the trainer/developer. The California teachers actively participated in all phases of the r and d including report writing. Although both teams were understandably dependent upon the researcher's skills and the trainer/developer's abilities during the respective research and training phases of their work, the California team engaged in more substantive and procedural discourse regarding r and d procedures and products (especially the formal, written ones) than the Vermont team. This relative lack of substantive team member attention to the designs and final reports (particularly teacher attention) was true to a greater degree for the Vermont research than for the Vermont training. The Vermont trainer/developer's initial formulation of the training design received marked revision attention from the teacher members of the team. Further, as noted in Chapter Four, the California team engaged in systematic discussion, formulation, review, critique, and revision cycles at almost every step of the IR&DT process, while the Vermont team only began to assume a systematic approach to their work when they entered the data collection step in their research. What was seen, then, was collaboration in both sites but collaboration which included a more pronounced substantive focus in California.

Given these differences in collaboration, it is possible to speculate tentatively that the difference was related to the team composition as discussed in the previous section of this chapter. In that discussion, it was noted that the California teachers and trainer/developer were involved actively and historically in activities which called for what might be labeled "sophisticated school-related behaviors." This was less true for their Vermont counterparts. Thus, one could hypothesize that workplace norms fostered risk-taking and independent learning in the California site and not in the Vermont site. This situation, combined with different conceptions of what it is to be a professional educator, might account for the difference in collaboration modes.

Also, it should be acknowledged that the Vermont researcher and trainer/developer were institutional representatives of a university whose principal relation with schools was that of providing service. The institutional histories in Vermont, therefore, demonstrate an organizational linkage in which one group of persons, in the university, provides assistance and leadership to another group of persons, in the public schools. It would not be unusual for such a relationship to influence how public school teachers view the persons who come from the serving institution (e.g., as expert problem solvers) and, in turn, to account for the teachers on the Vermont team taking a less active and less substantive role in regard to the r and d activities following question generation than their California counterparts.

At the time of IR&DT orientation, all members of both teams were enthusiastic about the proposition that teachers would be central to the r and d effort. That is, teachers would work with others rather than simply being the subjects of the work of others. As was reported in Chapter Four, both teams maintained this stance through the research question generation phase of their work. The teachers on the team and teachers outside the team organization participated extensively in recommending and verifying "important" research questions. Ultimately, both teams selected a research topic that originally was suggested by one or more teachers on the team. Later, the California team maintained the "work with" mode as the teachers on the team became participant observers using their own classrooms as research sites (along with four additional teachers), whereas the Vermont team moved to nine new classrooms using them more as research subjects than as "work with" partners in the entire r and d process. Nonetheless, the strength of this participation, particularly that of the California team, is a marked departure from conventional approaches to r and d on teaching.

In a collaborative mode, the question of leadership is complex. On the one hand it might be expected that leadership would be shared (as, perhaps, an extension of team member parity). On the other, it might be expected that leadership would emerge as a consequence of the task immediately before the group. What appeared to happen in the IR&DT implementation was a subtle adaptation of the latter. Since both teams began the IR&DT process with research-specific issues and tasks, the researcher, as noted above, early on was the substantive leader of both teams. In varying degrees, the teams depended upon the researcher for information and skill. The California researcher acknowledged this dependence and demonstrated a carefully orchestrated set of behaviors which allowed him to contribute to the group's work strongly and positively but which also engaged the group systematically and consistently in deliberations about the work. Nonetheless, it was apparent, at least in formal meetings, that the researcher was seen by the other members as the leader and was so acknowledged in final interviews. The California trainer/developer also demonstrated leadership behaviors, but perhaps less overtly than the researcher in that they were facilitative and procedurally supportive rather than directive. For California, then, the team began with an acknowledgement that the researcher was initially the most important member of the group in terms of the research issues to be treated and persisted in that acknowledgement with some attention to the trainer/developer as leader-facilitator throughout the IR&DT implementation.

Although similar in its general outlines, a somewhat different pattern was found in the Vermont team. From the beginnning of the IR&DT implementation until well into December 1977, the researcher was subtly as well as actively and vocally reluctant to be seen as "leader." He resisted making definitive statements more often than not. He probed group members for their views, their reactions, their solutions to problems faced by the team. Often, he would not provide an expected solution to a problem even though a "school-sophisticated" person would have observed that he could have done so. During this period of the implementation, he emerged as leader in terms of group process and procedures rather than as substantive leader. Subsequent to the NAP critique of the research design, the researcher began a conscious attempt to introduce more substantive leadership and, with the help of the trainer/developer, began to focus his procedural leadership less on group process goals of a personal-human nature and more on task-orientation and goal-accomplishment. Team members in Vermont, in final interviews, designated the researcher as leader throughout the IR&DT experience.

Leadership on both IR&DT teams, then, was vested in the research role. In California the leadership issue was linked to the researcher's initially needed knowledge and skill and persisted throughout the implementation. In Vermont the researcher originally was a "personally" understanding leader, assuming substantive leadership responsibilities only after the team's initial research design was rejected by the NAP.

As was seen in Chapter Six, all members of the teams perceived the IR&DT experience as increasing their knowledge and skill across roles. That is, teachers became more knowledgeable and skillful about research and development and researchers and trainer/developers became more sensitve to and understanding of the complex world of the classroom teacher. This illustrates the power of collaboration of the sort called for in IR&DT to create opportunities for participants to move beyond a specific work orientation, to become more understanding of one's own level of skill development, and to act positively upon that understanding.

Based on the above findings, it can be concluded that both teams engaged in a collaborative r and d process but the form of this collaboration differed markedly on the California team as compared with the Vermont team. In particular, while both teams achieved parity among team members, the California team demonstrated more equal assumption of r and d functions based on the individual team member's expertise, engaged in more systematic enactment of their respective roles, conducted an r and d effort that assumed a "work with" stance during more steps in the process, and worked with a leadership pattern vested in the researcher that was more substantively oriented than that of the Vermont team.

Problem Solving Focus

Certain concerns were identified in Chapter One in relation to conventional r and d on teaching. One was that problems which are of interest to university or r and d institution-affiliated researchers are typically not seen as interesting or important to practitioners, in this instance teachers. It was suggested that if practitioners were involved in r and d as central participants, the work accomplished would reflect what other practitioners see as "real" problems. A related concern was that much of the school-related r and d in the United States was a product of an outsider's view of the classroom or the school. IR&DT, it was claimed, would promote r and d which emerged from the reasoned conclusions about classroom life by persons whose worklives were in the classroom and the school. Further, it was believed that the resultant r and d would be more credible (i.e., believable) to practitioners in general. The attention here, then, is on the focus of the research: problem-oriented and somehow real to teachers as opposed to esoteric and arcane.

In varying degrees, both IR&DT teams took the issue of teacher credibility of r and d seriously. As can be seen in the teams' research reports and in Chapter Four of this document, teachers participated extensively in determining the issues to be studied. However, there was variation between the teams relative to assuring credibility of these issues, particularly in regard to the pattern of validation of their tentative research questions by teacher colleagues. The California team made early and persistent attempts to determine, formally and informally, whether what they planned to study was as important to other teachers as it was to the teachers on the team. In contrast, the Vermont team presented a list of issues to teacher colleagues asking for a ranking of interest but then engaged in more extensive systematic validation only as a consequence of Far West Laboratory technical assistance, which emphasized the need for more extensive validation. Given these findings, it is possible to hypothesize that the subsequent judgments regarding utility of the r and d findings, showing some lower rankings for the Vermont work, are related to this difference between teams.

As a problem focus for the r and d of the two teams, it is apparent that the California team's work was linked theoretically and practically to an issue which has a long history of attention by both research and conventional wisdom. On the other hand, the Vermont team's work had elements of historical attention (supportive instructional behavior) but conceptually depended upon a difficult-to-define human construct (mood). It might be concluded, therefore, that the California problem was a practice-related one with high visibility in local and national classroom settings whereas the Vermont problem was a person-related one which may or may not be found in subsequent inquiry to be central to the teaching-learning environment of the classroom.

Conducting Concurrent R and D

Three related arguments were put forth to support the need for the IR&DT strategy. Because research and development were seen typically as two unrelated processes, one dependent upon the other, which, when considered as linked activities, exhibited expenditure of effort over a long period of time, IR&DT proposed that (1) r and d be given attention at approximately the same period in time by the same persons, (2) development of training need not always await the completion of a research effort, and (3) procedures of inquiry as well as findings of the research could be the focus for developmental efforts.

Both IR&DT teams exhibited enthusiasm for the possibility of temporal and conceptual linkage between the r and d they were expected to accomplish during the implementation period. The inclusion of a trainer/developer on each team provided the groups with a persistent monitor of the entire implementation process for potential development activities. Although in actuality development was given concerted attention only near the completion of the data collection stages of the research phase for both teams (see Chapter Four), there were repeated instances of attention to activities and procedures which might be used in the teams' training (development) efforts from the beginning of the research effort, i.e., with the inception of question identification, particularly by the California team. As both teams began to consider systematically the training (development) they would formulate, there was a consistent belief expressed that the procedures in which they, themselves, had engaged during the research phase would be powerful training opportunities for others. Consequently, as can be seen by examining the two teams' final training reports, both training programs included elements of the IR&DT process itself and the respective team's research procedures as well as opportunities to examine and understand the team's research findings.

Thus, it can be concluded that the essential feature of concurrent attention to r and d was present in both teams. By this we mean that, in terms of team action, r and d overlapped conceptually such that a Venn diagram might illustrate properties which were in common from one phenomenon to another (research to development) but it also would illustrate properties of the same two phenomena which were separate. A more precise descriptor of what occurred might be "concurrent attention to and proximate implementation of r and d".

Maintaining the Integrity of the Classroom

Because much of conventional educational r and d was viewed as imposing artificial controls upon classrooms and persons in them, thereby transforming conventional aspects of a well-known social institution into one that was unrecognizable to practitioners, IR&DT has as an essential element the requirement that classrooms, teachers, and students be allowed to remain as natural as possible during the conduct of r and d. In reviewing this feature of IR&DT, it is worth repeating the Kounin (1977) challenge for educational r and d that was presented in Chapter One of this report. This is to study:

> real life settings
> populated by real
> people in real
> people roles
> (p. 4)

Within the IR&DT strategy, it was believed that this element would be accomplished by ensuring that teacher sensitivity to classroom life was a major data source when decisions about r and d were made. This sensitivity was expected to result in greater-than-usual attention to the complexity of the classroom and reflection of that complexity in the data collection and intervention strategies formulated for the r and d.

As can be seen in Chapter Four, this feature of IR&DT was realized in both sites. The two research projects were resolute in their attention to maintenance of the classroom as a natural setting. Although observers were introduced into classrooms, a period of orientation and "getting acquainted" preceded data collection. Further, even the monitoring equipment (e.g., miniature lapel microphones for the California teacher subjects) was selected after a thorough search of available equipment with the principal criteria for use being the effectiveness of the equipment in terms of requirements of data collection and unobtrusiveness when in use.

IR&DT as an Intervention Strategy

One of the essential elements of IR&DT was recognition that participation in an IR&DT effort could serve as a change and/or professional development vehicle for the sites and the participants.

As the more detailed discussion in Chapter Six demonstrated, participation in IR&DT did appear to have consequences for individual participants and for cooperating institutional settings. It was shown that participants increased their awareness of educational options and possibilities partly as a consequence of the requirements of systematic inquiry into schooling. Such increased awareness, it is believed, is a major professional development outcome in that school persons are typically unaware of programs and practices outside the purview of their own institutional settings. Although the evidence suggested that the Vermont team benefited more extensively on this dimension of the strategy, it should be remembered that the California team members, especially teachers, exhibited entry-level behaviors which might be termed more professionally sophisticated than those of the Vermont team members.

An intervention outcome that was sharply evident was the increased knowledge and skill regarding educational research and development exhibited by the participants. All members of both teams, through observation and self-reports, can be said to be more knowledgeable about, skillful in, and sensitive to research and development issues as a result of their participation in the implementation of IR&DT.

As was pointed out in Chapter Six, the historically persistent condition of teacher isolation was ameliorated for the participants in IR&DT. Teachers related to one another and to the researcher and trainer/developer in ways which were not typical. Systematic, focused, and interactive inquiry provided avenues of and for professional communication which had not been a usual pattern in their worklives. The institutional isolation, school from school and school from university, was also reduced to a degree. The concerns of the team and the actions upon those concerns "forced" the institutional relations which came about in the course of the implementation period.

Another intervention outcome was an increased belief that the work of other team members was of value and otherwise "prestigious" in their immediate workplaces and in the broader educational community. Particularly true of teacher members of IR&DT teams, participants initially expressed pleasure at the status implicit in being central to the study of IR&DT. This initial status reaction appeared to shift gradually but persistently to pride in the work in progress and the work completed as immediate and far-ranging contributions to the world of schools and teachers which would be useful and engaging. The combination of increased capacity to deal with r and d issues and the belief that the work which emerged out of that capacity was of positive value are seen as powerful antidotes to growing sentiments that teaching and teachers are of low status and low priority in terms of social action and reward systems at local and national levels of authority.

Although IR&DT did not have as an initial intention the significant alteration of professional practice by participants, such alteration did take place. Self-reports from participants indicated that participation was, indeed, influential upon practice. Teachers changed some of their instructional patterns, researchers learned and demonstrated new skills, trainer/developers revised and reordered certain beliefs and practices regarding teacher education, and so on. It is apparent that some of these changes were a consequence of the issue under study in the team's r and d efforts, some a result of the processes engaged in during such study, and some related to the requirements of interaction with other educators.

There is an indication, partly specific and partly general, that participants also began to rely less upon what might be called "conventional wisdom" and more upon prior research and/or expert testimony as their work proceeded. In both teams, although more markedly so for Vermont, initial discussions were informed more often by what individual participants had experienced than by findings from more systematic inquiries into the issues. Particularly true for teachers, less so for trainer/developers, and occasionally so for researchers, team members eventually came to question one another and others regarding the accuracy of statements, reports, formulations, and the like. It is believed that IR&DT contributed to this shift partly because of the requirements of conducting research and partly because of the technical assistance aspects of the implementation as demonstrated by Far West Laboratory and National Advisory Panel input (see Chapter Four).

Summary

This section has presented conclusions related to the degree to which the essential features of IR&DT, as put forward in Chapter One, were found to be present in the two teams during the implementation of IR&DT. Speculations were occasionally advanced as to the reason(s) for the conclusions though most often the conclusions were a consequence of reducing findings presented in earlier chapters to more general statements.

Although there were variations between the California and Vermont teams, it can be concluded that generally the essential features of IR&DT were present in both.

Extent to Which Assumptions Underlying IR&DT Were Manifest

Four major assumptions were identified in Chapter One as forming the foundation for proposing the IR&DT strategy. These were the assumptions that: (1) participative r and d strategies which include teachers are needed, (2) IR&DT will contribute to educational knowledge and theory building, (3) the results of IR&DT will be generalizable at least in a logical-situational and vertical sense, and (4) participants' unique skills and perspectives will contribute to the success of IR&DT.

The data reported in Chapter Five regarding the r and d outcomes produced by the California and Vermont IR&DT teams provide insights relative to the manifestation of and support for the first, second and third assumptions. The rigor of the research and training outcomes indicates whether r and d accomplished via the IR&DT strategy is of a quality that warrants use by other teachers, researchers and trainer/developers. The usefulness of the outcomes as perceived by other teachers, researchers, and trainer/developers testifies to the need for the strategy, the contribution of the outcomes to knowledge and theory building, and the generalizability of the findings. A summary of these findings will be presented here.

The fourth assumption, participants' skills, was already discussed in the previous section of this chapter within the framework of the team composition features of IR&DT. However, further discussion of this topic also will be included here.

Extent to Which R and D Products Reflect Rigor and Usefulness

An undergirding premise of IR&DT was that resultant r and d--the research findings, training processes and procedures, reports and materials--would be perceived to be as rigorous and as useful as other r and d outcomes by those constituent groups usually associated with producing and utilizing educational r and d. For purposes of this study, these groups were identified as teachers, researchers, and trainer/developers (e.g., staff developers and teacher educators who are involved in the preservice and/or inservice education of teachers). Assumptions related to this premise were discussed in Chapter One. Investigation of the premise was based on four questions enumerated in Chapter Two. The outcomes of interest were the rigor of the research as enacted and reported, and the usefulness to teachers, staff developers, and teacher educators of both the research and training (r and d) as enacted and reported.

In order to render judgment of the two IR&DT teams' research and training, two procedures were used. The first was a jury system in which six juries comprised of three people each and representing experts from the various constituent groups mentioned above generated criteria and judged the teams' r and/or d outcomes using their final research and training reports as the primary information source. The second involved identifying seven additional experts representing the appropriate constituencies and six counterpart constituents from each team's site, each of whom responded to items on a questionnaire in relation to the teams' r and d reports. These procedures are explained in Chapter Two and the results are reported in Chapter Five.

The two constructs selected for evaluation--rigor and usefulness--are commonly used in the educational r and d community to infer degrees of scientificness and utility. However, while the two terms are used extensively, until now few attempts have been made to develop and substantiate criteria for determining the extent to which a given r and d effort achieves these expectations or to compare one r and d product with others such that degrees of rigor and usefulness are established. For the purpose of the IR&DT Study, rigor was defined initially as conveying notions of scientific precision: strict, exact, accurate adherence to standards of excellence. Usefulness was based on the definition given in the American College Dictionary: "of pracical use, as for doing work; producing material results; supplying common needs..." (1966, p. 1338).

As a result of the judging of the IR&DT teams' r and d outcomes by the juries and experts mentioned above, conclusions can be drawn about the r and d outcomes resulting from use of the IR&DT strategy. In addition, because the juries were required to generate the criteria to be used in judging the teams' work, information also is available relative to the content and characteristics of these criteria. In turn, the judgmental criteria and the jury procedure provide an exemplary model for judging the outcomes of other educational r and d efforts.

Rigor and usefulness of r and d produced by IR&DT teams. It is clear that, using criteria developed by the six juries assembled to judge the research and training products of the two IR&DT teams, r and d can be assessed for its rigor and/or its usefulness by qualified persons in the field of education. Further, such assessment can be made in comparison with what is considered to be "typical" for educational r and d in order to determine the degree of rigor and/or usefulness of a particular product or outcome. Chapter Five details how these assessment were made for the two IR&DT teams' r and d. The composition of each jury also is outlined in Chapter Five. In summary, two juries were comprised of researchers, one to judge the rigor of the research and one to judge the contribution of the research to knowledge and theory building. Two juries were comprised of teacher educators, one to judge the rigor of the teams' training and one to judge the usefulness of each team's r and d outcomes when the contributions of both the research and development were considered for each site. One jury was comprised of teachers who judged the usefulness of both the r and d outcomes and one was comprised of staff developers who also judged the usefulness of both r and d.

In judging each IR&DT team's r and d products, jurors compared them with what they perceived to be typical, using as norms the educational r and d with which they were familiar. A summary follows of their overall judgments for each team's efforts.

Researchers judging the California IR&DT team's research found it to be somewhat more rigorous than typical educational r and d. As well, it was judged to be moderately useful for knowledge building and theory development by the jury looking at usefulness of the research findings to other researchers. In terms of the rigor of the training, jurors found the California training to be slightly more rigorous than typical training programs. Teachers judged the total California r and d effort to be much more useful than typical educational r and d. Both the staff developer and teacher educator juries concurred with this judgment.

Vermont's research was judged to be somewhat less rigorous than typical educational research. Relative to the contribution of the research to knowledge building and theory development, the second research jury judged the Vermont outcomes to be scarcely useful. The Vermont training program was judged to be slightly less rigorous than is typical for educational training programs. Teachers found the Vermont r and d effort as a whole to be not at all useful, but staff developers judged the total effort to be somewhat more useful than is typical for educational r and d and teacher educators judged it to be as useful as other educational r and d.

These judgments of six different juries make apparent the success of the California IR&DT team in terms of both the rigor and usefulness of their r and d outcomes. In addition, the same juries judged Vermont's efforts to be somewhat questionable, with only the staff developers and teacher educators finding the Vermont r and d outcomes to be of some value.

In general experts that rated the products using questionnaires were as positive as were those on the juries regarding the California team's r and d outcomes. In the case of the Vermont r and d, however, experts were more positively disposed than were the juries. This was true for all three categories of experts--teachers, researchers, and teacher educators. One reason this might have occurred may be the nature of the task. Experts responded to tightly constructed items on a questionnaire while juries developed their own criteria and judged products conceptually. Other factors which might have contributed to the differences in the judgments were the fact that the experts worked in isolation from each other and did not have the opportunity for interaction as did jurors, and experts were not required to reach consensus as the jurors were.

In addition to the seven experts, role counterparts at each IR&DT site--like and unlike counterparts for teachers, researchers, and trainer/developers--were asked to respond to the same questionnaire as the experts. To do so, counterparts read the r and d reports for the team at whose site they were located. It is interesting to note that, for both teams, site role counterparts were more positively disposed toward the team's r and d than were either the experts or the juries. An explanation for these higher ratings might be that counterparts' expectations were different in that r and d activities of the sort engaged in by each team were unusual activities for those settings. Further, the counterparts' judgments most likely reflect knowledge of the respective site contexts in terms of needs, problems, and capabilities that was not available to the juries or the experts. This knowledge, coupled with the norms applied to educational r and d at that particular site, may suggest that IR&DT outcomes are of even greater value when the specific needs of local educational institutions and practitioners are considered rather than the needs of institutions and practitioners in general.

In summary, it can be said that the r and d outcomes of the California team met the expectations and demands of the assumptions underlying IR&DT in regard to the rigor and usefulness of the research and training. In the opinions of the juries, the Vermont team's outcomes met some demands at a minimal level and failed to meet others. The experts considered the Vermont r and d to be adequate relative to rigor and usefulness. The site counterparts were positive in their ratings of the Vermont team's r and d outcomes.

Content and characteristics of rigor and usefulness criteria. A major contribution of the IR&DT Study is the criteria for rigor and usefulness generated by the six juries. The presentation in Chapter Five of jury proceedings provides evidence that such criteria, usually used only implicitly to convey degrees of scientificness and utility, can be made explicit. Juries had little difficulty in reaching consensus on which criteria to use in their judgments of the IR&DT teams' r and d outcomes. As well, each was able to use its criteria successfully for judging degrees of rigor and/or usefulness by comparing independently each teams' r and d outcomes independently as presented in their research and/or training reports with those typically found in educational r and d.

In each instance, criteria were specified and described such that they were immediately applicable to judging r and d products. When a given criterion seemed to encompass one or more broad constructs, jurors were careful to provide precise language, mostly in the form of questions, to clarify the conditions, outcomes, etc. that were being judged or to divide the criterion into sub-parts. The criteria developed by each of the six juries are enumerated in Chapter Five as part of the discussion of each jury's deliberations.

From the six juries, a total of 41 major criteria were generated. When subparts of these are included, the juries, in combination, applied a total of 94 judgment points. The number of discrete criteria generated by a single jury ranged from a high of 30 to a low of 6. The largest number of criteria was developed by the jury that evaluated the teams' research reports for rigor of the research. This jury identified eight major criteria, each of which had several sub-parts such that the total number of judgment points equaled 30. The fewest criteria (6) were generated by the staff developer jury that evaluated the usefulness of each team's total r and d effort. The jury to evaluate usefulness of the research to knowledge production and theory building generated seven major criteria. Ten major criteria with sub-parts to total 15 judgment events were developed by the jury to evaluate the training products for rigor. The teacher jury for usefulness of the r and d identified seven major criteria with a total of nine judgment events. The teacher educator jury identified three major criteria with a total of 27 judgment events to look at usefulness of the teams' r and d.

Such figures do not necessarily reveal the inclusiveness of criteria, since some juries chose to incorporate several sub-parts into single, major criteria which served as rubrics for evaluative constructs while others broke them out as separate judgment events. In addition, no jury assigned differential weighting to criteria, so determination of how important some criteria might be when compared with others is not possible.

Criteria for rigor and usefulness differ. Given that the juries were charged with looking either at rigor or usefulness, it is not surprising that criteria developed for these two constructs differed somewhat. Nevertheless, an assumption held frequently for educational r and d is that if a product or process is rigorous, it naturally follows that it will be useful. For this reason, differences in the rigor and usefulness criteria that were applied in this IR&DT Study are of particular interest.

Even though researchers who represented similar experiences and perspectives served on the juries, when asked to develop criteria for rigor or for usefulness, they tended to look at different aspects of the research. This occurred when criteria were given similar labels as well as when totally separate criteria were applied.

In addition, when the usefulness criteria developed and applied by teachers, staff developers, and teacher educators are compared, differences also appear to exist. Generally, it can be said that the criteria developed by these practitioner groups reflected broadening interests in teaching and teacher training as one moved from the teacher to the staff developer to the teacher educator jury. Teachers focused almost exclusively on their constituency in generating criteria. That is to say, they stressed the immediate usefulness of the r and d in a classroom setting. The staff developers considered the needs of classroom teachers as well as themselves when generating criteria. Teacher educators included usefulness to teachers, teacher trainers--whether staff developers or teacher educators--and researchers. In addition, both the staff developer and the teacher educator juries chose to consider other collaborative r and d efforts with which they were familiar in developing and applying their usefulness criteria such that potential usefulness of the IR&DT strategy as enacted by each team could be judged as well as the individual team's r and d outcomes.

One could speculate that this change in the scope and perspective by which "usefulness" was judged was a natural occurrence in that teachers tend to think of themselves in terms of teaching only, while staff developers usually are former teachers whose primary interests now focus upon organizing professional development programs for teachers. The same argument could be extended to the teacher educators, at least in this instance, since all three members of that jury had previously taught and included among their current responsibilities the education of preservice and inservice teachers and work with students in advanced education degree programs.

Other differences also were apparent in usefulness criteria. All three usefulness juries identifed as areas of concern such factors as the importance of the question or topic, the manner in which the r and d had been reported, and its impact on teachers or for the training of teachers. For the teacher jury, however, the immediacy of usefulness of the r and d was paramount.

This is stated implicitly in their criteria, and the deliberations of their jury as reflected in their comments in Chapter Five underscore their concerns in this area. On the other hand, both staff developer and teacher educator juries were concerned with cost effectivenss and transportability while the teachers were not. Interestingly, teachers also did not cite the r and d process as the basis for judgment but the other two juries did. In that teachers do not include among their perceived responsibilities the conduct of r and d, this might account for why the teacher jury did not single out process for separate consideration. However, since one recommendation made by the teacher jury speaks to their affirmation of the IR&DT strategy, it can be concluded that they did consider this to be important.

Judgments for rigor and usefulness differ. Earlier in this discussion it was pointed out that, while the eduational r and d community tends to perceive of r and d that is rigorous as being useful as well, criteria that were generated for these two constructs by similar but separate juries indicated that what constitutes rigor does not necessarily constitute usefulness. The jurys' judgments based on these constructs also revealed differences which are of interest here.

As summarized earlier, the jury organized to look at the rigor and the one asked to judge the usefulness of the research for each team arrived at different judgments. For instance, in the case of the California IR&DT team's research, the rigor jury judged it to be somewhat more rigorous than typical educational research but the usefulness jury perceived it to be only moderately useful in terms of contributing to knowledge building or theory development. In addition, while the rigor jury found the Vermont IR&DT team's research to be somewhat less rigorous than is typical for educational research in general, the usefulness jury judged it to be only scarcely useful for knowledge production and theory development.

This contrast between rigor and utility also was revealed in the judgments rendered by juries looking at the training for the Vermont team. The rigor jury found the training program to be almost as rigorous as the typical educational training program. However, teachers judged this same training program to be not at all useful even though both the staff developer and teacher educator juries found some value in it. The rigor jury found the California team's training to be only slightly more rigorous than is typical of educational training programs, although when judging the topic as a training focus (single criterion), they indicated it was more rigorous. On the other hand, all three usefulness juries rated the California r and d to be much more useful than typical educational training programs. Relative to these differences in judgments of the training outcomes, it should be noted that persons on the usefulness jury comprised of teacher educators represented experiences and expertise similar to those of persons on the rigor-of-the-training jury so that their biases and perspectives could be expected to be similar. Inasmuch as differences in ratings occurred between these juries, it appears that training programs which are judged to be rigorous in terms of adherence to standards of excellence of execution cannot be assumed automatically to be useful to their client groups or to those who are charged with implementing them.

Thus, it appears that a product--research or training--which adheres to rigorous standards cannot automatically be assumed to be useful. In that both rigor and usefulness are important considerations, based on the judgments made in this study, it can be concluded that serious consideration should be given to validating the usefulness of "potential" r and d outcomes before undertaking rigorous procedures to produce them.

Summary. The conclusions drawn above regarding the judgment of the two IR&DT teams' r and d products are based on data presented and discussed more fully in Chapter Five. It is clear that juries were able to develop criteria for rigor and usefulness of the r and d and use these for arriving at judgments of each teams' efforts by comparing them with an existent norm. Further, these judgments compared favorably with those registered by experts and site role counterparts who responded to items on a questionnaire in relation to the r and d conducted at each site. Both the criteria utilized and the information resulting from the judgments of the r and d products are important and lend potential information for further application in similar situations and for similar products. How the judgment of each teams' r and d products interfaces with information regarding the essential features of IR&DT is a subject for further reflection. A discussion of these interrelationships appears later in this chapter.

Participant Skills and Characterisitcs

Chapter One outlined several reasons why participant characteristics were considered important to the success of IR&DT. Among them were findings regarding characteristics, skills, and behaviors that had proven to be productive in other innovative r and d efforts in education, participant characteristics that were considered important by persons engaged in other forms of collaborative r and d, researcher skill requirements associated with naturalistic research, and trainer/developer perceptions and approaches to training that might be expected to be most productive.

The description of the IR&DT participants presented in Chapter Three indicated that the California team possessed several necessary skills and characteristics when they entered the IR&DT implementation effort. All California participants were able to describe the purpose of IR&DT and their individual roles in the implementation effort. The director of inservice education for the school district and the school principals saw themselves as facilitators of the process and were highly supportive of the project. In addition, the teachers on the California team possessed experienece in analyzing and structuring teaching to fit students' needs and in planning and implementing several innovative instructional programs. Having just completed a doctoral program, the researcher's research skills were current and at a relatively high level. He also brought considerable experience in evaluation of classroom-based teaching and learning. The trainer/developer had classroom experience and extensive experience in planning and conducting inservice education activities based on teachers' expressed needs.

The Vermont participants entered IR&DT with fewer desired skills and experiences. As noted earlier in this chapter, the teachers had not participated in planning or implementing innovative educational programs. In fact, for the most part, they were isolated from such activities. When asked to describe what they did as teachers, they were unable to analyze their teaching in terms of various behaviors or discrete purposeful acts. While the researcher had been trained in research, it was some time since he had designed and conducted a research study. Both trainer/developers had experience in designing preservice training programs and in giving inservice workshops but recently had been involved in few instances of school based program planning. The Vermont participants entered IR&DT with a clear understanding that the strategy had a problem-solving focus but only the researcher spoke precisely about the steps that were to be taken in the implementation of the strategy. Further, the acting dean, school superintendent, and school principal expressed reservations about the strategy even though they thought it would have payoff for their institutions. Neither the superintendent nor the principal outlined a facilitative role for himself.

The preceding discussion of the extent to which the essential features of IR&DT were achieved points out the possible effects of these differences in team members. The California team, whose members and supporting personnel fit the prestated characteristics much more closely than those on the Vermont team, carried out the strategy at a higher level of "perfection" than Vermont. In turn, the outcomes of the California effort were judged to be more rigorous and useful than those of Vermont. Thus, it appears that the fourth assumption underlying IR&DT was "on target". Participant characteristics are important.

Cost Effectiveness of IR&DT

In assessing the importance of the IR&DT strategy it is necessary to consider not only the outcomes of the r and d effort but also the costs associated with the achievement of those outcomes.

The previous sections of this chapter have summarized the IR&DT Study findings relative to the extent to which the essential features of IR&DT were present in the two implementation efforts, the rigor of the research and training that were carried out by the California and Vermont IR&DT teams, the contributions of their research to new knowledge about classroom-based teaching and learning, and the usefulness of both teams' r and d outcomes to various educational practitioners. Based on these findings, it can be said that IR&DT is at least as effective as the more conventional linear approach to conducting educational r and d. In fact, in the case of the California team, IR&DT resulted in research that was more rigorous than that produced by the typical educational research study. Further, in terms of usefulness to practitioners, the more an IR&DT team's efforts evidenced the essential features of the strategy, the more useful practitioners perceived the outcomes to be. That is, when the teachers, researchers, and trainer/developers on the IR&DT team gave a high degree of attention to the premises that underlie the IR&DT strategy and carried out the role functions specified for each team member in a systematic, thorough manner. the outcomes of their work were considered to be applicable in the classroom by teachers, to be immediately useful for purposes of inservice teacher education by staff developers and to have immediate use in preservice as well as inservice teacher education programs by teacher trainers who worked in institutions of higher education. In addition, given the changes in persons and institutions that were observed in the IR&DT Study, the strategy appears to be a viable approach to educational change as well as to the conduct of r and d.

It should be noted that such outcomes of an r and d strategy are in marked contrast to the statements that were presented in Chapter One of this report. In that chapter, the discussion of the need for r and d strategies which included teachers presented a dim picture of the usefulness of educational r and d, particularly in respect to the previous ability of educational dissemination (change) efforts to bring about change (improvements) in persons and institutions involved in the educational process. IR&DT appears to have "cracked" this wall of practitioner resistance while at the same time contributing new knowledge, procedures, and processes to the field of teaching that were rigorously derived, particularly in terms of the California IR&DT effort.

Therefore, the effectiveness of IR&DT does not appear to be at issue. However, the cost of conducting educational r and d in this manner is a matter for further conjecture. Several essential features of IR&DT suggest that the strategy should be more costly than other approaches to educational research in that unusual costs must be considered. In particular, teacher participation on the IR&DT team should add costs, e.g., payment of teachers for extra hours beyond the regular school day and/or hiring substitutes to release the teachers to work on the r and d team, that are not necessary when research is carried out in absentia of regular, ongoing teacher input. The early and continuous involvement of the trainer/developer also is a cost item that typically is not included in a research effort.

However, costs such as those mentioned above must be counter-balanced by the extent to which the teachers and trainer/developer on an IR&DT team assume responsiblities that would be carried out by research assistants in research efforts conducted within a conventional framework. When this is done, total r and d costs may not vary to a significant extent with other conventional approaches to research. Further, in assessing the cost of IR&DT efforts it must be kept in mind that both the California and Vermont teams completed the development of a research study and a teacher training program within a 15 1/2 month period. Once the research was completed, so was the development. This shortened timeline actually may contribute to lowering overall r and d costs -- an effectivenss measure which is an important consideration.

The actual total cost for all subcontracted r and d activities conducted on-site by the IR&DT teams during the implementation effort reported herein was $95,517 for California and $82,753 for Vermont. Detailed information regarding expenditures for the California team illustrate the cost breakdown. The California team spent $22,135 to pay the teachers for hours beyond the regular school day and for six weeks of full-time work on the teacher case studies during the summer of 1978. In addition, $440 were spent for substitute teachers, and $19,120 were paid to the trainer/developer for his half-time involvement with IR&DT activities. Other staff costs included the half-time salary of the researcher, some secretarial costs, and payment of observers, all of which are typical research costs. However, of the staff costs for the California team, the $22,500 or so paid over the 15 1/2 months to have teachers participate is an extra cost item not usually included in a research effort. Given that a school district or institution of higher education wanted to carry out an IR&DT

effort, the researcher and trainer/developer could be assigned from the regular salaried staff but teacher time beyond the regular school day and during the summer vacation period and substitute teacher costs would be added costs. On the other hand, since the teachers and trainer/developer on the California team participated in data analysis and wrote the case study reports which saved the team from hiring other research assistants, these costs do not necessarily represent *extra* costs, but rather payment for the staffing pattern that differed from more conventional research staffs.

Regarding the total amounts listed above for both teams are comparable with the cost of a typical research effort sponsored by a federal education agency. Further, if the typical cost of a federally funded research effort is combined with that for a typical development effort--which in a linear approach to educational r and d follows *after* the research as a *separately* funded activity--the costs for conducting r and d using the IR&DT strategy are surprisingly *low*. To obtain *both* research and training products for the amounts listed above is an economic path to take.

This is so even when the costs of external review by the National Advisory Panel (NAP) and the technical assistance offered by Far West Laboratory staff are included for each site. NAP costs were $2,600 for the California team and $3,000 for the Vermont team across all the review and critique activities they undertook for the teams--review of research designs, training design, and final research and training reports. (This sum does not include NAP costs related to review and critique of the overall study of IR&DT that was conducted by Far West Laboratory.) Based on the 100 or so technical assistance contacts between the California team and the Far West Laboratory staff, it is estimated that some 30-50 hours were devoted to provision of technical assistance to that team. This represents four to six work days which, at an estimated costs of $200 per day, would add $800 to $1,200 to the California team's costs. Approximately 185 technical assistance contacts occurred between the Vermont team and Far West Laboratory staff. Total estimated time devoted to such activities includes 60-95 hours, which represents 8 to 12 work days, or a cost of approxmately $1,600 to $2,400. Using the highest estimated figures for NAP and Far West Laboratory technical assistance costs, the total cost for the r and d work of the California IR&DT team would be $99,317. The Vermont team's total costs would be $88,153.

Taking into account the costs and the outcomes of IR&DT as demonstrated by the California and Vermont IR&DT teams, IR&DT can be said to be a cost effective r and d strategy. Further, given the range of outcomes for both sites--research, training, and school/professional development--at no extra cost, IR&DT appears to have been more effective than any single manifestation of one of these efforts implemented independent of others under conventional r and d strategies. The intentional orchestration of these elements in IR&DT makes it attractive and viable as well as economical when total potential effects of outcomes are considered.

Interrelationships Among Findings

This report has presented in detail the rationale for, requirements of, implementation findings related to, and judgments regarding the r and d process and products which emerged during the implementation of IR&DT. The quantity of the study data, acknowledged in Chapter Two as being greater than what could be used for this report, allows for a discussion which focuses upon possible relations between the elements which have been presented up to this point. It should be understood that these relations are, to a degree, speculative. The nature of the data generated by the procedures and the study orientation of those data and procedures (as opposed to a more strictly research orientation) preclude drawing precise, cause-and-effect conclusions. However, it is considered necessary and important to advance questions and hypotheses which link elements of the IR&DT Study, both process and product, as a set of tentative explanations for findings already reported as well as to point toward potentially fruitful avenues for further inquiry. This section, it is hoped, will serve these purposes.

It has been noted that the two IR&DT teams' processes of interaction and the products of that interaction differed. The California team exhibited more of the desired role functions, as specified in Chapter One, than the Vermont team. Similarly, the California products in the form of r and d outcomes were judged more positively than were those for Vermont. It is very likely that there is a relation, then, between process and product.

It will be recalled that the California team, beginning with the orientation sessions and proceeding throughout the implementation period, dealt with r and d issues systematically, persistently, and methodically. The team's procedures also were characterized by high involvement of all team members at each stage of the process. This involvement took different forms--shared responsibility alternating with specific group-mandated assignments for certain tasks and with whole-group critique and revision--which, taken altogether, were linear and rational.

The Vermont team, again from the orientation period throughout the study, illustrated a more erratic, less rational pattern. Particularly during the early stages of the implementation period, the Vermont group's efforts were somewhat sporadic in terms of coming to grips with the essentials of the r and d process. The team's apparent preoccupation with the personal-social dimensions of its members' relationships may have influenced the degree to which it could effectively and efficiently accomplish its primary IR&DT missions: the formulation and conduct of r and d on teaching.

This raises the important question of why this difference was present. As has been noted elsewhere in this report, the Vermont trainer/developer role was fulfilled by two persons, one of whom replaced the original member three months into the implementation period. The first trainer/developer has been characterized as being much more interested in human relations' processes than in educational research and development, as demonstrated in Chapter Four. He appeared to use the term "interactive" more in terms of team processes than for the interrelationship of r and d. In addition, he exhibited confusion as to which role functions were most appropriate to the IR&DT effort. The period of his membership on the Vermont team was significantly less task-oriented and IR&DT-specific than subsequent periods of the team's interaction. Because the period of his membership coincided with the critical research design formulation phase of IR&DT, upon which much, if not most, of the subsequent efforts were based, it is informally hypothesized that, had the second trainer/developer been a team member from the beginning of the effort, the consequences and processes of implementation would have been different.

Another phenomenon, perhaps related to the trainer/developer issue noted above, was the apparent reluctance of the researcher on the Vermont team to assume substantive leadership during the early research phase of the project. Although the researcher was acknowledged by the team members as the leader throughout the implementation period, the nature of his leadership was, for some time, more procedural and human-relations oriented than it was research oriented. It was noted that there was some rivalry exhibited, and so described by participants, between the researcher and the original trainer/developer. This rivalry may have influenced the researcher to "soft pedal" his research influence. Also, it has been acknowledged that the researcher's principal activities at the university were related to what would be termed trainer/developer activities--the formulation and implementation of a model teacher education program. It is possible to assume that this overlap of role function by researcher and trainer/developer in the institutional setting was, to a degree, carried over into the IR&DT setting with attendant expectations that the two persons, researcher and trainer/developer, were really not all that different and that to note such differences would be detrimental to group harmony.

The relative differences between teacher members of the two teams, in terms of prior experience related to "special" innovative program activities, is considered to be critical to the process and product of IR&DT. It has been noted that the California teachers had had experiences which were aligned with the assumed requirements of IR&DT--using teaching as a base for changing institutional behavior, responding to and engaging in externally-required information-gathering and report writing, working on school improvement projects, participating regularly in professional development activities, and the like. The idea that IR&DT was somehow "exotic" to the setting was expressed only minimally by the California teachers but was pronounced for the Vermont teachers. What might be concluded is that the IR&DT experience was better accomplished by persons, particularly teachers, who had had other similar experiences during the course of enacting their professional roles.

There also is believed to be a relation between institutional history and successful IR&DT based upon the data collected for the implementation study. The more successful team was located in an organizational context which was marked by decades-long attention to issues of professional development; curriculum revision; innovative program development, implementation, and evaluation; introduction to state and federal special programs; support of an organizational unit designed to support and encourage professional growth; and so forth. The Vermont team, however, was located in a setting which had a history of sharply less attention to such issues. In California, then, there was a set of institutional norms, expectations, and support mechanisms which were barely present, if present at all, in the Vermont context. For the Vermont team, in the language of Sarason (1972), it was necessary to create a new setting. In contrast, for California it was necessary to determine how best to use the accustomed setting. As noted in Chapter Four, the orientations to IR&DT for the two teams were approximately the same. In retrospect, the finding noted earlier--that there were apparent differences between the two teams at the time of entry into IR&DT, these differences becoming more evident over time--suggests that the orientations should have been conducted differently with different foci and different emphases. Although it was not conceived originally as such, IR&DT, like other school change efforts, appears to be situation-specific. That is, knowledge of the context and the participants should have influenced to a marked degree the nature and expected outcomes of the IR&DT orientation.

The issue of differences in team member experience backgrounds and skills and their relationships to effective ways of working with and within an IR&DT team did come sharply into play at the time of the NAP response to the teams' research designs in December 1977. At this time, the decision was made to work very differently, in terms of technical assistance, with the two teams. The California team, although monitored carefully in terms of observation and documentation, was allowed to move ahead as a relatively independent unit in that it had displayed persistently the presence of the essential elements of IR&DT as discussed in Chapter One of this report and reviewed earlier in this chapter. The Vermont team, on the other hand, was offered, often gratuitously, much more direction by Far West Laboratory technical assistance staff. This variation at first was viewed as a possible distortion of IR&DT in that it was assumed that the strategy, because of team composition and other elements, should act itself out positively within minimally-imposed r and d boundaries. It is now believed, however, especially in light of the positive professional development consequences for both teams' members apart from the production of r and d on teaching, that the "treatment variation" should have been introduced earlier. This variation should have given more strategic attention to inducing the essential elements of IR&DT into the setting, in this case Vermont, wherein the interactive strategy was to take place. Most likely, such intervention should include training of participants in the skills they lack given what has been learned regarding participant characteristics and successful IR&DT.

Closely aligned with the discussion of institutional context as it relates to successful implementation of IR&DT is the issue of the broadly-conceived institutional and demographic "surround" of individual participants. Both sets of team members were, with few exceptions, bound professionally, personally, historically, and currently to the educational and municipal communities in which IR&DT was implemented. It was acknowledged that an initial consideration for the implementation was that the settings be different. The difference, it was believed, would provide evidence that IR&DT could work itself out satisfactorily in settings which, when compared, illustrated variation. Given the discussion immediately above, it was found that the strategy did, indeed, work in varying degrees in both an urban and rural setting. However, there appear to be relations between the variations in settings, the variations in IR&DT processes as they were enacted, and the r and d products that resulted.

For example, there is enormous intellectual and social "baggage" carried by such seemingly straightforward descriptors as "urban" and "rural." Among the items in such baggage are the prior professional experiences described earlier, e.g., the resources available for intellectual and social stimulation, the communication linkages between and among agencies charged with social action, the norms of social and personal interaction, the expectations regarding what is "good and right and proper", the habituation of energy expenditure given the relative variety of options for behavior in the setting, and so forth. Thus, it would appear that the potential influence of the degree of cosmopolitanism which pervades the environment in which persons carry out their lives should be recognized. It is believed that the California team members, by virtue of their presence in a relatively cosmopolitan environment, were more readily adaptable to the requirements of IR&DT than were the Vermont team members whose immediate surround was less cosmopolitan.

Lest the use of the abstract term "cosmopolitanism" leads to the conclusion that IR&DT will be readily transferable to any urban setting, it must be acknowledged that the California team, as noted above, nonetheless sought and received technical assistance. While it was noted in Chapter Four that technical assistance took somewhat different forms for California than for Vermont, the point to be made is that even the most exemplary schools and school systems can often be described correctly as "closed systems" (Griffin and Lieberman, 1974). Thus, introduction of external perspectives, input, and monitoring is desired in IR&DT regardless of the location of the effort and the surrounding support structures. From the beginning of the IR&DT experience, it was apparent that technical assistance was playing an important role. The role most conventionally played was what the term implies, assistance of a technical r and d nature. Occasionally, however, the role could be characterized as being more personal-professional. That is, in addition to offering r and d information and advice, it was beneficial to let the participants in the process know that "someone cared" about their efforts and to make public that caring. Any efforts to intervene into the closed system of the school are more apt to succeed if accompanied both by ideological/technical assistance and humane support. The importance of this to IR&DT was seen during the implementation period in terms of the behaviors of certain Far West Laboratory staff and NAP members as they appeared to impact upon both what was done and how IR&DT members felt about what was done.

Although IR&DT originally was conceived as an alternative mode of conducting r and d on teaching with the intention of producing high quality solutions to problems teachers considered to be important, it was found that the strategy also appeared to result in more conventional, less r and d specific, professional development outcomes. It has been noted by Griffin (1978) that there currently appear to be two sets of intentions of school professional development programs: (1) outcomes which impact directly on the mission of the schools (teaching and learning) and (2) outcomes which impact upon the persons and contexts through which the mission is expected to be accomplished. The latter group of outcomes are ones which were evident for IR&DT participants. These included increased collegiality, decreased isolation of professionals and institutions, and increased willingness and ability to reflect upon what one does as educator. The implementation period demonstrated that IR&DT appears to be related to such outcomes as well as to the formulation and conduct of r and d on teaching. This suggests that IR&DT may be a vehicle for school settings which are in need of means for solving school problems while at the same time acting upon professional development issues.

It has been noted that the implementation of IR&DT by the two teams demonstrated that IR&DT can reduce the typical time lag between production of research findings and development of training opportunities based on those findings. One reason for this reduction in time, it must be admitted, was the external imposition of contract requirements upon the teams by Far West Laboratory.

It will be recalled from the discussion of problems in Chapter Six that all team members suggested that the time allotted to IR&DT be increased from 15 months to at least 24 months in future efforts. Were this done, the time needed to complete the r and d cycle still would be significantly shorter than is typically the case. However, it is not known whether the imposed time restrictions which were the result of contractual constraints impeded the result, nor whether more time made available would have enhanced them.

In addition to externally imposed deadlines, dimensions of IR&DT also appear to have contributed to the reduced time lag. First, both teams believed that the research procedures and team interactions during the first phases of IR&DT were so beneficial to them that they included these aspects of the IR&DT effort in the training opportunities they developed. Therefore, the processes which were adopted for training were ones which were familiar, had been experienced, and were conceptualized as a consequence of that experience and familiarity. Second, since the trainer/developer was involved in the r and d process from the beginning, it was not necessary for a "naive" developer or a group of naive developers to engage in the difficult and arduous tasks of translating and transforming the research processes and findings for the purpose of formulating a development vehicle. This overlap of procedures and persons in the form of IR&DT membership and activities is seen as a powerful contribution to the much more efficient r and d cycle which was demonstrated during the implementation.

Returning to the original conception of IR&DT as an alternative strategy for engaging in r and d on teaching, it was noted that the products of the strategy were expected to be useful to practitioners. The term, practitioners, here is used to describe IR&DT members' role counterparts -- teachers, trainer/developers, and researchers. Juries of experts deliberating together, and experts and site counterparts responding independently to specific questionnaire items, believed the California efforts to be very useful and the Vermont efforts to be variously useful. In addition, the process of IR&DT as enacted at either site was judged to be useful for the conduct of r and d and for skill development and what might be termed "consciousness raising" by participants in the process. The usefulness judgments for the California team are reinforced by on-site behavior. The inservice program which emerged out of their r and d is currently (June 1979) in its third cycle within the school district with maximum enrollment for each cycle. Only the first cycle was part of and supported by the IR&DT effort. The others have been conducted by the school district independent of outside requirements or support.

There is, then, evidence to support the originally conceptualized conclusion that the mix of elements in IR&DT, with particular attention to the inclusion of teachers in r and d endeavors, does result in products which are seen to be positive contributions by persons who might be expected to be users of those products.

It is important in this section to acknowledge the presence during the implementation period of what Berman and McLaughlin (1978) refer to as "mutual adaptation." This concept suggests that innovations not only change the environment in which they are placed but are also changed by the environment. During the course of IR&DT implementation, there were many subtle differences in the strategy of the operationalization which emerged. These were usually procedural but some were pronounced (e.g., the decision to provide different orders of technical assistance). These were a consequence of systematic documentation of the process and reflected the belief that it was possible to accommodate the needs and expectations of the users of the strategy, within certain boundaries, as the IR&DT process unfolded. There also were adaptations made by the participants and institutions engaged in the implementation. For example, originally the time and energy demands of participation were not envisioned realistically by the IR&DT team members but they responded to these demands positively, consistently, and energetically. Also, institutions were required to alter some of their persistent practices in order to accommodate IR&DT, e.g., when courses were offered at the university. Most often procedural, these alterations were not accomplished without some difficulty, but in the end they were accomplished. When engaged in a school intervention effort such as IR&DT has proven to be, it is important to understand the institutional regularities in order to work effectively within them and for the institutional regularities to be flexible enough to be modified if the change effort realistically requires the modification. A careful look at what modifications might be necessary in order to conduct r and d using the IR&DT strategy appears to be a necessary part of planning and preparing for implementation of the strategy.

This section has offered speculations regarding the relations among IR&DT team process and product, team composition and process and product, leadership and IR&DT success, institutional context and IR&DT implementation, participants and cosmopolitanism, team process and technical assistance, IR&DT and professional development of participants, IR&DT and the r and d cycle, and IR&DT and utility of products. Certainly, many more such relations can be found to be present in the data which comprise this study. Only the most apparent relations, based upon available data, have been presented here. It is hoped that the discrete pieces of information presented in Chapters Three, Four, Five and Six of this report in combination with these more general statements provide a basis for understanding the potential of IR&DT as a means to accomplish rigorous and useful r and d on teaching and to bring about in the process positive professional development consequences for participants.

The next section presents recommendations which emerged out of the study of IR&DT as described up to this point in this report.

Future Recommendations

The previous sections of this chapter have summarized the findings of the IR&DT Study. To repeat, it was found that a team comprised of a researcher, a trainer/developer, and one or more teachers conducted r and d in a way that met the essential features of the IR&DT strategy. Further, when the strategy was enacted such that a high level of congruence with the specified features was achieved, the r and d outcomes were proven to be more rigorous than those produced using a typical educational r and d approach. Further, given a high level of implementation of the strategy, both the strategy itself and the r and d outcomes that were produced were considered to be much more useful than typical r and d outcomes by teachers, staff developers from local educational agencies and professional teacher organizations, and teacher educators from institutions of higher education.

Based on these overall findings and the information obtained in the IR&DT Study relative to the requirements for successful implementation/application of the IR&DT strategy, the following recommendations are advanced regarding the strategy.

Recommendation I

> The IR&DT strategy should be used for conducting a portion of the educational r and d effort at the national, state, and local education levels. The more the r and d outcomes are intended to result in improvements in education that are to be used in classrooms by teachers, the more important the use of the strategy becomes.

The value and workability of the IR&DT strategy has been demonstrated in the implementations that were carried out for the purposes of the Study reported herein. In particular, the California IR&DT team demonstrated the potential worth of the strategy to the field of education.

Given that a high level enactment of IR&DT, as per the essential features of the strategy, results in research outcomes that are considered to be the product of rigorous inquiry and are seen as more useful than most research outcomes by practitioners, IR&DT warrants use as an r and d process.

Further, regardless of the quality and worth of the products produced via IR&DT, the strategy also has been shown to be an effective mechanism for bringing about changes in people and institutions that previously have been difficult to accomplish. Such changes were particularly evident for the participants in the Vermont IR&DT implementation effort.

Much has been written regarding the isolation of the teacher from the r and d process (for example see Guba and Clark, 1974; Krathwohl, 1974; and Goodlad, 1979). Recent studies of educational innovation (e.g., Berman and McLaughlin, 1978; Goodlad and Klein, et.al., 1974) have indicated how difficult it is to introduce and maintain changes (improvements) in school-based education. Others (Ward and Tikunoff, 1976; Bussis, Chittenden, and Amarel, 1978; Mishler, 1979) have pointed out how little of the r and d output is considered to be useful by those practitioners who must apply it in order for the intended improvements in education to take place.

The findings of the IR&DT Study suggest that by using the IR&DT strategy to conduct educational research and development, each of the above problems is alleviated. However, because of the limited length of the IR&DT Study and the use of only two implementation sites, questions remain regarding such factors as the permanence of the changes that occurred in institutions and participants and the actual adaptation/use of the r and d outcomes, particularly those produced by the California team, by those teachers, teacher educators, and practitioners from other settings who thought the outcomes were highly useful based on their jury, expert, or counterpart judgments but who were not asked to apply them in actual settings as part of the evaluation (judgment) of the strategy and by others throughout the nation.

Hence, the limitations in the recommendation stated above. We encourage the use of IR&DT to increase participation of teachers as equal partners in r and d, to increase the perceived usefulness of r and d and to provide a powerful personal and institutional change strategy for school problem solving. At the same time, we recognize that IR&DT should be considered as one of several viable r and d strategies. As indicated in the recommendation, a decision to use IR&DT should take into account the intended results of the r and d effort. For some knowledge and theory building purposes, IR&DT most likely is not the best r and d strategy to apply, but for others it most likely is. When making this decision, the goals of the proposed r and d effort should be taken into account. Regardless, teachers, researchers, trainer/developers (teacher educators and staff developers) and federal and state funding agencies are urged to consider IR&DT as an available and productive option for conducting educational r and d.

Recommendation II

> Site and participant selection and/or training of participants prior to initiating IR&DT efforts are important antecedents to enactment of IR&DT in an "ideal" form. This is particularly important because ideal conduct of IR&DT is necessary for achievement of r and d outcomes that are more rigorous and more useful than "typical" educational r and d products.

The entry level skills and experiences of the California and Vermont IR&DT participants differed considerably. The California participants' r and d skills had been developed and applied on a regular basis in their respective positions in the school district. They had participated in the planning and implementation of several innovative classroom-based instructional programs and they were able to analyze and structure instructional programs in terms of various types of needs. The Vermont participants lacked most of these experiences and had had little recent (re)training in research, development, or teaching skills.

Further, the institutional support system available in California was more extensive and facilitative than that in Vermont.

The differences in the way the California and Vermont teams enacted the IR&DT strategy and in the outcomes of their r and d efforts also were marked with the California team achieving a more "ideal" enactment of the strategy than the Vermont team and the California research and training products receiving substantially higher rigor and usefulness ratings by other researchers, trainer/developers, and teachers.

However, in terms of professional growth and institutional change, the changes that occurred as a result of participation in the IR&DT effort were greater in Vermont than California.

These data suggest that when r and d is being conducted for the purpose of contributing to the advancement of knowledge in the field of teaching (or in other areas of education), thereby necessitating high quality outcomes, the site(s) and participants should either possess the skills, knowledge, and support characteristics evidenced by the California team or, if such do not as yet exist, prior to initiating IR&DT training should be designed and conducted to build them.

If, on the other hand, the IR&DT strategy is being used for intervention purposes--that is, to bring about change in persons and institutions as a means for improving a local education program--one may intentionally elect to begin where persons and institutions are lacking in the "desired" skills. Even in this situation, orientation to IR&DT should be designed to provide experience in analyzing and restructuring instructional programs and to acquaint the participants with what is to be done at each of the r and d steps to be carried out by the team. This is particularly important when the researcher on the team is lacking in r and d experience. Otherwise, the work of an IR&DT team could become of such low quality that the changes that did occur might not be desirable.

Recommendation III

> Some form of external review and assistance is recommended for all IR&DT efforts.

Three aspects of the IR&DT strategy make it essential to utilize external resources since each demands more expertise than one reasonably can expect to find on any given team. These aspects are: (1) the complexity of the problems teachers identify for study, (2) the use of multiple research strategies that most often is required by the problems that are selected, and (3) the ideological "shakeup" that is a "normal" occurrence in an IR&DT effort.

Both the California and Vermont IR&DT teams selected research issues that were challenging and complex. Arriving at operable, observable, measurable definitions/descriptions of variables such as distractions and coping strategies (in the California research) and mood and supportive instructional behaviors (in the Vermont research) was a difficult task. An important role in "tightening up" and improving the research design for both team was provided by input from Far West Laboratory staff and the National Advisory Panel (NAP) regarding identification of (a) research efforts in which similar variables had been studied, (b) strong and weak points in various definitions, (c) alternative ways to measure the variables, etc. Further, review and critique of the Vermont team's thinking regarding the variables to be studied and the procedures to be used to obtain information about them was considered essential to the quality of the r and d by the NAP and Far West Laboratory staff and was seen as helpful by the Vermont team members, particularly the researcher.

As might be expected in a research study that is to take place in the "natural" classroom setting, the researcher on the California team found that he needed to utilize data colleciton and analysis methods with which he was unfamiliar. As a result, he asked Far West Laboratory staff to train him in ethnographic research methods. Such training was offered to the researcher and trainer/developer on both teams. It is expected that other IR&DT teams will need a similar capability to tap the skills of persons from a variety of research methodologies.

The professional growth that results from participation in an IR&DT effort already has been mentioned. As persons and institutions change, support, guidance, and reassurance are needed. Typically, such help is requested from and provided by people external to the immediate setting in which change is occurring. IR&DT teams need this help.

Recommendation IV

> Changes in resource allocations (funding/budgetary policies) of federal, state and local educational agencies will be necessary in order to utilize IR&DT extensively.

A major feature of IR&DT is that the question/problem that is the focus of the r and d effort is identified by the teachers on the team, usually in collaboration with other teachers in the school district(s). This requirement is imposed in order to increase the likelihood that the research issue will be of high interest and concern to teachers and to stress the problem-solving purposes of r and d.

However, including such a requirement in the IR&DT strategy places the strategy in confrontation with the funding procedures utilized by federal, state, and other funding agencies. Typically, a federal educational agency, e.g. the National Institute of Education or United States Office of Education, or a state department of education issues a request for a proposal (RFP) to do work in a problem area that already has been stipulated. Further, in order to obtain funds to conduct r and d related to that problem, the applicant must indicate in advance what will be studied and how and, at times, the RFP even specifies these details of the r and d effort.

Given these circumstances, it is inappropriate to utilize the IR&DT strategy. There is no guarantee that the specific problem identifed by the federal or state agency will be of high priority (concern or interest) to teachers. Most often, prior to being funded, time and resources are not available to bring teachers, researcher, and trainer/developer together to "check out" the problem with other teachers, identify important variables (if such flexibility exists), or try out various data collection strategies to determine whether they interfere with the natural classroom setting.

To alleviate such hindrances to use of IR&DT, we recommend that funding agencies increase the use of an already existing funding strategy--the planning grant--and, in addition, develop a new policy that allows at least a small portion of the educational r and d effort to be funded on the basis of the skills, experience, background, etc. of the persons and institutions that comprise a proposed IR&DT team.

In the first instance, the planning grant can be used to bring together an IR&DT team to identify a critical problem/question of high concern and interest to teachers and to design an r and d effort that responds to that problem. Just as the California and Vermont research designs were reviewed and critiqued by the NAP, the federal, state, or other funding agency could conduct reviews of any IR&DT team's design and determine whether to continue funding based on these reviews. The only difference between this use of a planning grant and the typical use might be in the lack of restrictions on the problem(s) to be studied. Otherwise, this approach uses a common funding tool.

In contrast, funding a team based on its composition--utilizing the site and participant criteria included in Recommendation II and the purposes for using IR&DT outlined in Recommendation I--is a marked departure from typical procurement and funding procedures. We, nonetheless, encourage agencies to explore the possiblity.

Another avenue for funding IR&DT efforts is redefinition of dollars and responsibilities attached to staff development, educational evaluation, and educational dissemination positions in a local or intermediate educational agency. The intervention outcomes of IR&DT suggest that persons in these positions would bring about as much, and more likely more, improvement in education if they were assigned to carryout IR&DT efforts as part of their regular work in lieu of workshops, etc. Were this to occur, costs for teacher involvement would have to be considered. But, given that improvement/innovation is desired, reallocation of funds and personnel to support IR&DT teams warrants serious consideration.

Recommendation V

> IR&DT should be implemented and studied in settings with participants other than those involved in the original implementation.

IR&DT as an alternative mode of conducting educational r and d had teaching as its substantive focus for this initial implementation of the strategy. Further, that focus was upon teaching in the early years of elementary school.

The findings of the IR&DT Study suggest that IR&DT may be an appropriate mode for conducting r and d at other levels of schooling and with different foci. For example, problems of administration and leadership, curriculum revision, school organization, school-community relations, school system articulation and the like could be the objects of IR&DT attention. In the event that such extensions of the strategy were put into place, the practitioner role members of IR&DT teams would change to include not only teachers but also administrators, central office staff, community members, and the like. It is considered desirable to determine the degrees to which such alterations in membership and problem focus would support or modify the effects of IR&DT which are reported for the IR&DT Study.

As was noted in Chapter Six, the implementation study did not discover as much about the impact upon institutions, particularly higher education ones, as would be desirable. It is considered necessary to engage in both follow-up and newly-conceptualized studies to determine more precisely the immediate and long-term effects upon institutional settings. In regard to institutional participation in IR&DT, it also is necessary to examine other organizational configurations. What, for example, would be the consequences of using IR&DT as part of a school networking strategy? What IR&DT role functions could be provided by linkage agents between and among educational institutions? How would IR&DT impact upon institutional r and d if contained solely within an institution of higher education (IHE) as opposed to IHE representatives working through IR&DT in a public elementary or secondary school? What would be the effect of IR&DT in secondary school settings?

A third issue related to future research is to provide more evidence regarding the findings reported herein. In a study with a larger set of IR&DT teams, some with teaching as focus and others not, would there be support for the elements and findings which were central to the initial implementation? Do the recommended site characteristics and participant role functions hold up as supportive components of IR&DT? These questions and others illustrate the need to provide additional data to those provided in this report.

It is believed that the process and product findings in this study support the need for continued investigation and demonstration of IR&DT. Also, it is believed that the study of such further efforts can rely upon many, if not all, of the procedures outlined in this implementation of IR&DT.

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Appendix A

SAN DIEGO ABSTRACT

COPING WITH CLASSROOM DISTRACTIONS
or
Please Take a Number,
I'll Be Right With You

ABSTRACT

San Diego IR&DT Team
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INTRODUCTION

This is one of a set of studies conducted by an Interactive Research and Development on Teaching (IR&DT) team, an activity of the Far West Laboratory for Educational Research and Development. The aims of IR&DT are for a team comprised of teachers, researchers, and trainer/developers to focus on teachers' problems and concerns and to collaborate with parity among members to identify a question, conduct research into that question, and develop training simultaneously for other teachers which grows from both the research strategies employed by the team and the findings of their research.

The IR&DT team that conducted this study consisted of four elementary school teachers, one researcher, and one staff development person, all employees of the San Diego Unified School District. They participated as one of two teams that served as the focus for studying the implementation of the IR&DT strategy. Under funding from the National Institute of Education, and conducted by FWL, the study inquired into (1) the participant, site, and institutional characteristics and the processes that are indicative of successful use of the IR&DT strategy; and (2) whether r and d conducted in this way would be as rigorous and useful as that typical of educational r and d. The implementation study is reported separately in another document. This abstract serves to synthesize the r and d conducted and reported by the San Diego IR&DT team.

Team members were recruited by the FWL researchers in the spring of 1977. A three-day orientation session was held in August, 1977 which provided a rationale and an overview of the strategy, a survey of typical educational research methods, and enumeration of an eight stage research sequence. Then, the team negotiated a budget and proceeded to work together over the next fifteen months on conducting r and d into a topic of their choice. From this point on, FWL researchers served in the role of technical assistance only.

The question upon which the team focused their research was:

> *What are the strategies and techniques which classroom teachers use to cope with distractions to classroom instruction and how effective are the techniques?*

As the San Diego Unified School District currently was devoting attention to the importance of students' "time-on-task" (i.e., the concept of the amount of time students are engaged in meaningful learning activities), this question was considered particularly appropriate and timely.

The purpose of the research study, then, was to examine the techniques classroom teachers use to cope with distractions to classroom instruction and to determine how effective these techniques are with respect to: (1) minimizing instructional time lost due to distractions, (2) dealing with distractions at a level which has a minimally disruptive effect upon the flow of instruction, and (3) eliminating distractions.

Concurrent with conducting their inquiry, the team designed a training program for other teachers. This featured several components from the research methods used, particularly the data collection techniques developed by the team to inquire into their question. In addition, the training design included information about classroom distractions and coping techniques and engaged participants in the training to inquire systematically into their own classrooms for evidence of these.

Research was conducted in the spring of 1978, and data were analyzed and interpreted and reports written over the summer. The training design was accomplished in late spring and conducted in the fall.

This paper will summarize the three major reports of the study: the formal study itself; the teacher case studies, which provide discussions of findings, conclusions, and insights from the perspective of the teachers who participated; and the inservice training report, which details the activities undertaken in an inservice class offered by the trainer/developer.

THE FORMAL STUDY

Definition of Terms

The following terms are used in the study:

Classroom distractions may be defined as those events which take teachers and/or their students off the intended instructional tasks. This includes any behavior, activity or event that comes to the attention of either the teacher or the students. Classroom distractions generally activate or motivate a response from the teacher and/or students. The types of classroom distractions are contingent upon their source. Many distractions come from the students either alone or based on the interactions with other students (e.g., classroom noise). Other distractions come from outside sources such as visitors to the classroom, parents or staff members. Still others are from nonhuman sources such as the structure of the classroom or school, or special activities and other outside forces (e.g., weather, construction).

Coping techniques may be defined as any mechanisms, verbal or nonverbal, used by the teacher to eliminate a distraction. Some coping techniques are preventive in nature and are not used only to eliminate the current distraction but to prevent similar distractions in the future (i.e., the teacher reminds the student of the rules). These techniques are related to the teacher's classroom management skills and style. Other coping techniques are reactive. They simply react to a given distraction in order to eliminate it and get back-on-task.

Linkages are the interrelationships between classroom distractions and coping mechanisms. For the purpose of this study the relationship of a particular coping technique in response to a specific distraction is called a linkage. Certain types of distractions may evoke specific kinds of coping mechanisms. These, however, may be mediated by the key elements involved in the classroom such as the students, teachers and classroom environment.

Classroom distractions, *coping techniques* and *linkages* are examined in terms of the instructional time lost, the flow of classroom instruction (degree of disjointedness), and elimination of the distraction (degree of persistence after coping technique is utilized).

Methods

One of the problems associated with research in the classroom is the type of methodology appropriate to the study of behavior in such a setting. Some researchers have advocated that perhaps multiple perspectiveness to the interactions between teachers and students are needed, with quantitative data supplemented by qualitative data (Tikunoff, et al., 1976; Tikunoff and Ward, 1977; Rist, 1977).

While there has been a heavy reliance on quantitative data in the past, recent literature has advocated research in a naturalistic setting utilizing ethnographic methodology for the study of the classroom (Charlesworth, 1974; Fienberg, 1977). The use of ethnographic research methods can complement the use of quantitative methodology. In this study both types of methodology were utilized in order to gain insights into how classroom teachers cope with classroom distractions.

Subjects

Eight primary grade teachers participated in the investigation. Half of this group had been involved in the identification of the problem and the generation of the research design as members of the team (Level I teachers).

The remaining four teachers (Level II teachers) were recruited from similar grade levels and schools to provide a larger population for data collection.

Three of the Level I teachers were colleagues at a relatively small K-6 school with a faculty of 15 (student population was approximately 400 with 75% Black and 20% Hispanic). Approximately half of the school's families qualified for federal aid. The fourth teacher team-taught a class of 60 students in a large K-6 school (40 teachers and approximately 1200 students). Level II teachers were selected so that context characteristics (e.g., grade levels, school and student demographics) were similar to the other four.

Nonparticipant Observers

Eight persons were employed as observers. Selection criteria for this task included classroom experience, descriptive ability, and an attitude of sincere interest in the study. Before they started the data collection, they were given careful training. This involved a thorough explanation of the research process, practice with the observational techniques using both videotapes and real classrooms, and appropriate establishing of their reliability.

Data Collection

Data were collected from mid-February to mid-April 1978. The eight nonparticipant observers were divided into four observation teams. For each team, one nonparticipant observer collected quantitative data using an observation checklist, while the other used ethnographic techniques. In each classroom, the teacher acted as participant observer. Insights regarding the distractions which occurred and the coping techniques utilized, and circumstances beyond overt classroom actions, were addressed in a log which each teacher completed after each observation.

The focus of the ethnographic observer was primarily on the sequence of events and interactions between teacher and students. A wireless microphone and FM transmitter were used for recording relatively quiet teacher-student conversations, and as an information back-up. At the end of each observation, the ethnographer embellished the notes and dictated them onto cassette tapes. Each of these tapes was transcribed later. The quantitative observer transformed the other observational data to mark-sensed computer cards specially designed for the study.

Both of the nonparticipant observers attempted to be as unobtrusive as possible. The retention of a naturalistic setting was considered of paramount importance. Clarifications of distractions and coping techniques were kept to a minimum between the two nonparticipant observers.

Besides collecting information to document the kinds and frequency of distractions and coping techniques, the observers sought to collect data indicating the relative effectiveness of the various distraction-coping linkages. The three indicators of the effectiveness were *time, flow* and *elimination*. *Time* refers to the instructional time lost due to distractions and the various coping techniques. *Flow* refers to the degree to which the teacher and the students were interrupted from the intended instructional tasks. *Elimination* is the degree distractions persisted after the teacher exercised her coping techniques.

Findings

Distractions

The 29 distraction categories used for qualitative collection are displayed in Figure 1. During the 72 classroom observations (nine visits to each of the eight classrooms), a total of 3,062 distractions were coded.

FIGURE 1

DISTRACTIONS TO CLASSROOM INSTRUCTION

REGULARLY OCCURRING			IRREGULAR OCCURRING
STUDENT GENERATED	SCHOOL GENERATED	OUT-OF-SCHOOL GENERATED	WITHIN CLASSROOM
11. Students verbally interrupting the teacher	21. Sensory distractions	31. Pre-announced visitors	41. Unexpected visitors
12. Student seeking clarification	22. Student movement due to out-of-classroom activities/programs	32. Special project-related activities (testing, recordkeeping)	42. Communications to the teacher
13. Student-student interactions which are disruptive	23. Clarification of instruction needed by others (non-students)	39. Other	43. Unexpected arrival or departure of students
14. General student noise	24. School management-related activities		44. Misc. student problems
15. Students not concentrating on classroom activities (not on task)	25. Teacher creates distraction		49. Other
16. Student's physical position or location	29. Other		OUT-OF-CLASSROOM
17. Student intentionally attempting to disrupt instruction or challenge rules			51. Upset parent visit
18. Physical disorders to the classroom environment or to students			52. Last moment activities (field trip, assembly, etc.)
19. Other			53. Speakers
			54. School photographs
			55. Student elections
			59. Other

While the frequency varied between classrooms, an average of over 40 distractions for each observation occurred. In some classrooms, the distractions during the planned reading instruction time occurred more frequently than one per minute.

Table 1 contains data to illustrate the occurrence of distractions. Data are provided for each teacher (e.g., Teacher A), for both levels of teachers, and for all teachers combined. Only those distractions which occurred at least one percent of the total are displayed. The specific distractions which occurred most frequently are #11, #13, #14, #15 and #16. The percentages of occurrence of the various distractions are illustrated by Figure 2. Distraction #11, *Students verbally interrupting the teacher,* accounted for nearly one-quarter of the distractions (24.7 percent). This category included students interrupting the teacher, seeking approval, telling of other students bothering them, and a variety of student-generated questions.

According to Table 1, 89.2 percent of the distractions were Student Generated (Codes 11 through 19). School Generated Distractions (Codes 21-29) accounted for an additional 6.4 percent and the other irregular occurring distractions accounted for the remaining 4.4 percent. The relative occurrence of distractions was similar for grade-level counterparts (e.g., A and W were kindergarten teachers, B and X were first grade, C and Y were second grade, and D and Z were third/fourth grade open-environment classroom teachers).

An additional finding presented at a data review session is not summarized on Table 1. The teachers found that the majority of distractions in each classroom could be attributed to three or four students. One student accounted for nearly 30 percent of the distractions in his classroom.

Coping Techniques

For each event which was coded as a distraction, there was an action

TABLE 1

PERCENTAGE OF DISTRACTIONS OCCURRING* BY TEACHER, LEVEL AND COMBINED

OBSERVATIONS 1-8

TEACHER/GROUP	DISTRACTIONS																	
	STUDENT GENERATED									SCHOOL GENERATED		IRREGULAR OCCURRING		SUB TOTAL	SUB TOTAL	SUB TOTAL	SUB TOTAL	SUB TOTAL
(#)	11	12	13	14	15	16	17	18	19	21	25	41	42	11-19	21-29	31-39	41-49	51-59
A (535)	15.7	3.7	14.4	15.5	13.6	21.5	1.3	3.7	9.3	3.7	2.4	1.9	.4	90.5	4.7	.4	4.5	.0
B (350)	30.9	3.4	14.0	6.6	20.9	10.3	.3	2.6	.8	.0	3.1	.6	2.3	89.7	6.6	.0	3.8	.0
C (269)	28.3	3.7	12.2	4.1	16.7	13.4	5.6	4.8	.0	.7	4.5	.4	2.2	88.8	6.3	1.1	3.7	.0
D (339)	30.4	1.8	9.4	7.4	11.8	10.6	.9	.5	.0	7.4	4.7	2.7	6.5	77.3	12.4	.0	10.1	.3
LEVEL I (1493)	24.8	3.2	12.8	9.5	15.4	14.9	1.7	4.0	.5	1.9	3.5	1.5	2.5	87.0	7.2	.3	5.4	.1
W (547)	18.6	3.8	15.5	17.4	15.2	15.2	4.4	3.1	.7	.0	1.8	2.0	.0	94.0	3.5	.4	2.2	.0
X (450)	31.1	2.4	15.1	8.2	16.9	11.1	.4	2.2	.7	.0	7.8	.9	1.1	88.2	9.1	.0	2.7	.0
Y (246)	21.1	.8	22.0	13.0	16.7	4.1	7.7	6.5	.0	.0	.8	.4	.8	91.9	3.7	1.2	3.2	.0
Z (326)	27.6	3.4	6.7	2.5	19.9	23.3	.3	2.8	4.0	1.8	3.7	.3	1.5	90.5	6.4	.3	2.7	.0
LEVEL II (1569)	24.5	2.9	14.6	11.0	16.9	14.0	2.9	3.3	1.3	.4	3.8	1.1	.8	91.3	5.7	.4	2.6	.0
ALL TEACHERS COMBINED (3062)	24.7	3.0	13.8	10.3	16.3	14.5	2.4	3.6	.9	1.1	3.6	1.3	1.6	89.2	6.4	.4	4.0	.0

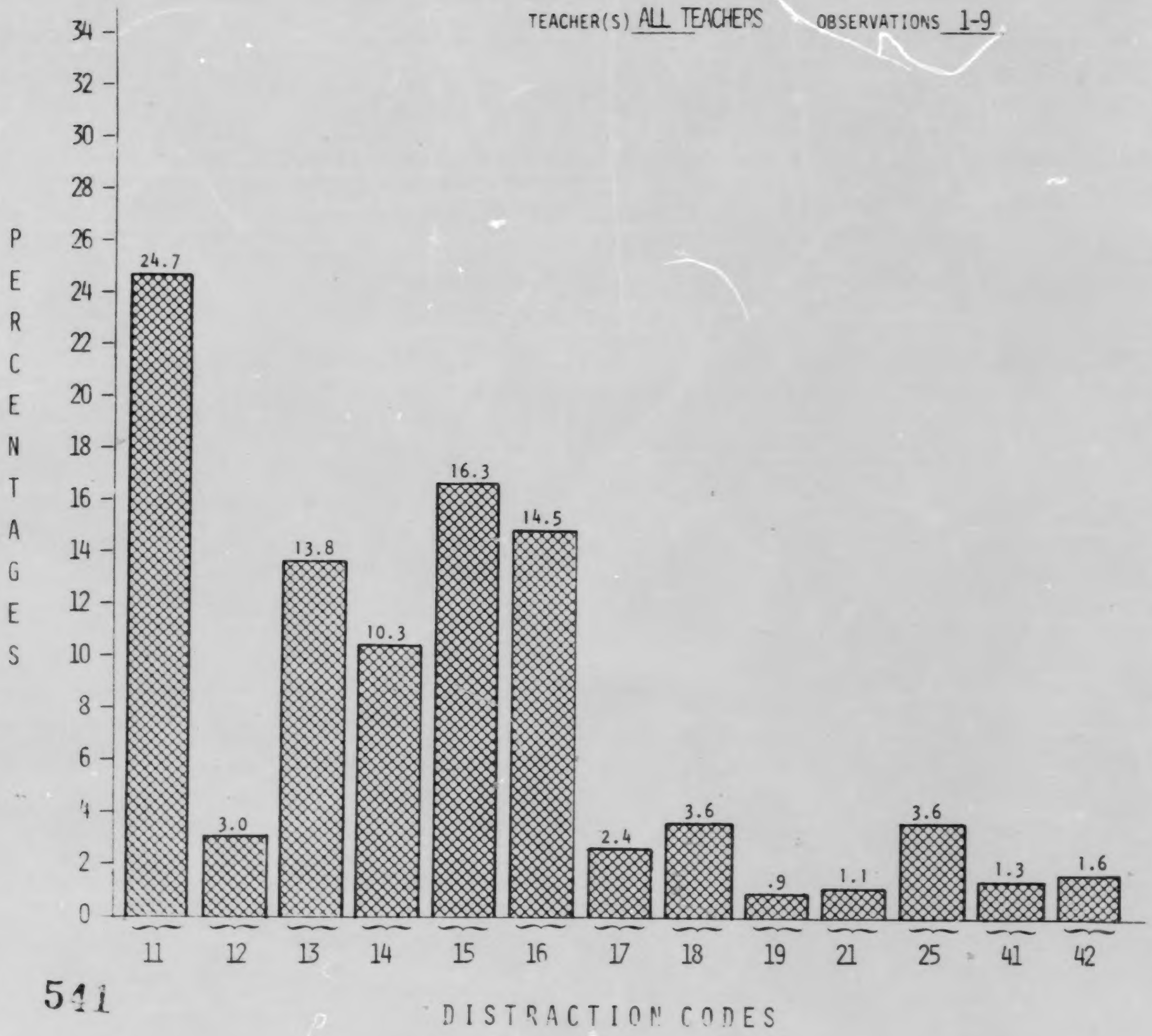
(#) = The number of distractions for that specific teacher or group.

*Only those distractions which accounted for at least one percent of the total are displayed.

FIGURE 2

DISTRACTION PROFILE

TEACHER(S) ALL TEACHERS OBSERVATIONS 1-9



DISTRACTION CODES

11. STUDENTS VERBALLY INTERRUPTING THE TEACHER
12. STUDENT SEEKING CLARIFICATION
13. STUDENT-STUDENT INTERACTIONS WHICH ARE DISRUPTIVE
14. GENERAL STUDENT NOISE
15. STUDENTS NOT CONCENTRATING ON CLASSROOM ACTIVITIES (NOT ON TASK)
16. STUDENT'S PHYSICAL POSITION OR LOCATION
17. STUDENT INTENTIONALLY ATTEMPTING TO DISRUPT INSTRUCTION OR CHALLENGE RULES
18. PHYSICAL DISORDERS TO THE CLASSROOM ENVIRONMENT OR TO STUDENTS
19. OTHER (STUDENT GENERATED)
21. SENSORY DISTRACTIONS
25. TEACHER CREATES DISTRACTION
41. UNEXPECTED VISITORS
42. COMMUNICATIONS TO THE TEACHER

taken by the teacher to cope with the distraction. Hence, since the total number of distractions was 3,062, there were also 3,062 coping techniques exercised (some of these coping techniques were actually combinations of other coping techniques). Figure 3 displays the types of coping techniques used in the quantitative classification system.

Table 2 contains the distribution of coping techniques utilized by each teacher. Only those coping techniques which accounted for at least one percent are displayed. Verbal techniques accounted for 71.9 percent of all techniques coded. Nonverbal, preventative or preplanned, and combination techniques accounted for 19.9, 3.1 and 5.1 percents, respectively.

Coping Technique #11, *Direct command*, was by far the most common technique (48.0 percent). This fact is clearly illustrated by Figure 4, which displays a histogram of those distractions which occurred one percent or more. The use of Coping Technique #11 varied from a low of 34.4 percent to a high of 63.5 percent amongst the various teachers.

From a review of the data in Table 2, it may be noted that the higher the grade level, the higher the percentage of use of Coping Technique #11. That is, Teacher D's (48.7 percent) use of the technique was more than Teacher C's (45.5), which was more than Teacher B's (38.9), which was more than Teacher A's (34.4). The same finding is valid for Teachers W, X, Y and Z (45.6, 57.6, 60.0 and 63.5 percents). Hence, it would appear that the higher the grade level, the more the use of verbal direction.

An interesting pattern, in the reverse direction, appears for Coping Technique #13, *Reminding students of rules*. The kindergarten teachers (A and W) reminded more than grade one teachers (B and X), who reminded more than grade two teachers (C and Y), who reminded more than grade three teachers (D and Z). This finding may be interpreted along with the above finding to infer

FIGURE 3

COPING TECHNIQUES

ONGOING TEACHER ACTIONS		PREVENTATIVE AND/OR PREPLANNED
VERBAL	NONVERBAL	
11. Teacher giving direct command or instruction (telling)	21. Teacher using body language, gestures and/or facial expressions	31. Reminding students of rules to prevent distractions from happening
12. Teacher complimenting positive behaviors or actions -- as an example of acceptable activities	22. Teacher moving or locating self with the classroom	32. Locating material or arranging classroom environment to reduce/prevent distractions from happening
13. Teacher clarifying or reminding students of rules (How it should be)	23. Teacher physically redirecting students' attention	33. Teacher using positive reinforcement techniques to encourage future appropriate behavior/actions
14. Teacher soliciting students to a behavior change by using varying voice techniques	24. Teacher calling attention to inappropriate behavior (signs, bells, etc.)	34. Teacher using other adults in the classroom to cope with or to prevent distractions
15. Teacher using varying patterns or clues to gain student attention	25. Teacher ignoring distraction (after exhibiting awareness of the distraction)	35. Class discussion of events which are yet to occur or of non-functional events which were disrupted
16. Teacher directing student to another person or location	26. Teacher showing how a task is supposed to be done	36. Teacher using students to help resolve distractions
17. Teacher putting distraction on hold	27. Teacher physically resolves distraction ("fixes it")	39. Other
18. Teacher telling how a task can be accomplished	29. Other	
19. Other		

TABLE 2

PERCENTAGE OF COPING TECHNIQUES UTILIZED*
BY TEACHER, LEVEL AND COMBINED

OBSERVATIONS 1-9

TEACHER/GROUP (#)	COPING TECHNIQUES																			
	VERBAL									NON VERBAL				PREV.		COMB.	SUB TOTAL	SUB TOTAL	SUB TOTAL	SUB TOTAL
	11	12	13	14	15	16	17	18	19	21	23	25	27	34	36	52	11-19	21-29	31-39	51-99
A (535)	34.4	4.5	14.0	2.2	5.8	4.3	1.3	.2	2.1	18.5	2.4	.4	3.0	.9	.6	3.6	68.8	24.7	2.6	3.9
B (350)	39.9	2.0	10.3	3.7	.6	3.4	1.1	.6	.9	12.9	2.9	1.4	7.8	.0	1.7	2.0	62.6	27.3	1.7	8.3
C (269)	45.5	1.1	9.7	3.0	3.0	4.1	3.0	4.5	.7	5.2	1.5	4.9	3.4	1.5	.7	.0	74.6	16.0	4.1	5.2
D (339)	48.7	.0	2.4	.3	.0	3.8	1.8	.6	7.7	13.0	.6	1.5	4.4	1.2	3.5	3.2	65.2	22.7	5.0	7.1
LEVEL I (1493)	40.9	2.3	9.7	2.3	2.8	4.0	1.7	1.1	2.8	13.5	1.9	1.5	4.6	.8	1.5	2.5	67.4	23.2	3.2	6.1
W (547)	45.6	2.4	14.1	1.6	1.5	3.8	1.5	1.8	.5	10.6	.2	2.4	2.7	3.3	1.3	4.2	72.9	17.0	5.3	4.8
X (450)	57.6	2.2	6.5	4.9	1.3	1.3	.4	3.1	1.6	5.6	2.5	.4	5.8	.2	1.1	1.1	79.0	15.4	1.6	4.0
Y (246)	60.0	.8	6.1	.4	1.6	5.3	1.6	3.7	.0	2.0	.8	6.1	6.1	.0	.8	.4	79.6	16.7	.8	2.9
Z (326)	63.5	1.2	1.8	.3	1.2	2.1	1.5	1.8	2.1	6.7	1.2	1.8	5.8	1.2	1.2	2.1	75.8	17.8	2.8	3.6
LEVEL II (1569)	54.8	1.8	8.1	2.1	1.4	3.0	1.2	2.5	1.1	7.0	1.1	2.4	4.8	1.5	1.1	2.3	76.1	16.6	3.0	4.2
ALL TEACHERS COMBINED (3062)	48.0	2.0	8.9	2.2	2.1	3.5	1.4	1.9	1.9	10.2	1.5	2.0	4.7	1.2	1.3	2.4	71.9	19.9	3.1	5.1

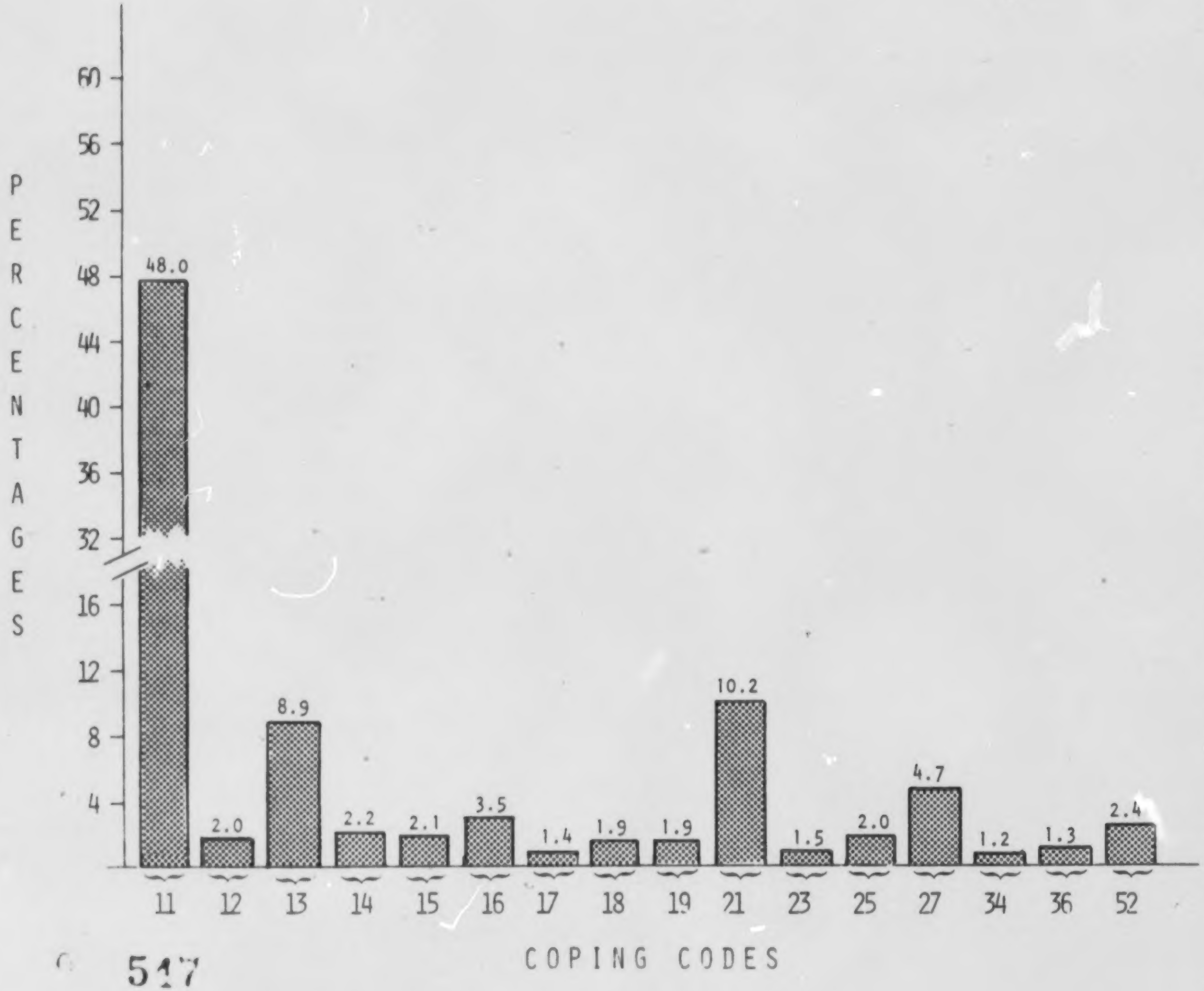
*Only those coping techniques which accounted for at least one percent of the total are displayed.

(#) = Number of distractions for that specific teacher or group.

FIGURE 4

COPING PROFILE

TEACHER(S) ALL TEACHERS OBSERVATIONS 1-9



CODES FOR COPING TECHNIQUES

11. TEACHER GIVING DIRECT COMMAND OR INSTRUCTION (TELLING)

12. TEACHER COMPLIMENTING POSITIVE BEHAVIORS OR ACTIONS -- AS AN EXAMPLE OF ACCEPTABLE ACTIVITIES

13. TEACHER CLARIFYING OR REMINDING STUDENTS OF RULES (HOW IT SHOULD BE)

14. TEACHER SOLICITING STUDENTS TO A BEHAVIOR CHANGE BY USING VARYING VOICE TECHNIQUES

15. TEACHER USING VARYING PATTERNS OR CLUES TO GAIN STUDENT ATTENTION

16. TEACHER DIRECTING STUDENT TO ANOTHER PERSON OR LOCATION

17. TEACHER PUTTING DISTRACTION ON HOLD

18. TEACHER TELLING HOW A TASK CAN BE ACCOMPLISHED

19. OTHER (VERBAL)

21. TEACHER USING BODY LANGUAGE, GESTURES AND/OR FACIAL EXPRESSIONS

23. TEACHER PHYSICALLY REDIRECTING STUDENTS' ATTENTION

25. TEACHER IGNORING DISTRACTION (AFTER EXHIBITING AWARENESS OF THE DISTRACTION)

27. TEACHER PHYSICALLY RESOLVES DISTRACTION ("FIXES IT")

34. TEACHER USING OTHER ADULTS IN THE CLASSROOM TO COPE WITH OR TO PREVENT DISTRACTIONS

36. TEACHER USING STUDENTS TO HELP RESOLVE DISTRACTIONS

52. COPING CODES 11 AND 21 COMBINED

that the younger the student, the more the teacher reminds the student of rules (a socializing effect) and, conversely, the older the student, the more the teacher tells the student what to do (it is assumed that the rule is known to the student).

The sixteen coping techniques displayed in Figure 4 accounted for 95.2 percent of the coping techniques utilized by the eight teachers. The other 4.8 percent were sparsely spread across sixteen other categories.

While there were marked similarities in the kinds of distractions which occurred in the primary grade classroom, similar grade-level patterns of coping techniques were not noticeable. This variance is, perhaps, reflective of the individual teacher personalities, teaching and coping styles, and educational philosophies.

Linkages

For each distraction coded, there was a coping technique exercised. This relationship is referred to as the *linkage* of the specific distraction and coping technique under consideration. Hence, for each of the 29 possible distraction categories, there were 24 coping categories eligible to resolve the distraction (not counting combinations). Regardless of the exact count, there are more than 700 possible linkages when each distraction is linked with each possible coping technique.

Table 3 displays a matrix of the frequencies of occurrence of various linkages. The codes down the left side of the matrix represent the distractions, and across the top are the coping technique codes. Subtotals of various groups of codes are indicated by "SUB". This display records the incidence of all 3,062 distraction-coping linkages.

Some of the major findings from this matrix refer to the extremes. For example, the Distraction-Coping Linkage #11--#11 occurred most often (405

TABLE 3

SUMMARY OF DISTRACTION-COPING LINKAGES

DISTRACTION X COPE

GROUP TEACHERS A-Z OBSERVATIONS 1-9

STAT. FREQUENCIES

DIST \ COPE	11	12	13	14	15	16	17	18	19	SUB	21	22	23	24	25	26	27	28	29	SUB	31	32	33	34	35	36	39	SUB	51	52	53	54	55	56	57	58	59	SUB	GRAND TOTAL	COMMENTS
11	405	17	56	10	6	25	25	25	16	585	75		4	3	22		27		5	136				4		4		8	3	12	1	3	1		1	1	4	26	755	
12	37	3	12		1	4	9	14		80	4	1			2	3	3			13																		0	93	
13	207	6	61	13	6	29		3	1	328	39	3	6		11		5			64				1		3		4	1	11	2	2	6				2	24	420	
14	110	15	47	6	14	6	1	2	1	202	52	1		12	3		5		1	74	1			5		3		9		16		1	8	1			3	29	314	
15	271	8	53	22	14	15	2	2		387	21	2	19	3	5	1	15			66	1			3	1	2		7	1	10	8	7	4			1	5	36	496	
16	250	6	28	10	18	10	3	2	2	329	50	2	11		8		10		1	82	1			1		2		4	1	19	1	2	4				0	27	442	
17	39	2	6	3	1	5		2	1	59	2		2		2	1				7						1		1	2	1				1			1	5	72	
18	49		4	2		3		3	1	62	14		1	1	1		21			38	1			1		4		6		2		1		1			1	5	111	
19	17	1	1			1			3	23	3									3	1					1		2									0	0	28	
SUB.	1385	58	268	66	60	98	40	53	27	2055	260	9	43	19	54	5	86	0	7	483	5	0	0	15	1	20	0	41	8	71	12	16	23	3	1	2	16	152	2731	(89.2%)
21	4									4	28				3					31								0										0	35	
22	6				1					7	5		1		1		2			9				1		1		2										0	18	
23	7							1	1	9	1						3			4				6				6										0	19	
24						1		1		2	1				1		3			5								0										0	7	
25	20	3		1	1	5		1	7	38	2	1			1		33			37	3	1	3	7		20		34			2							2	111	
29	3		1			1				5							1			1	1							1										0	7	
31	2									2					2					2				2				2										0	6	
32						1	1		1	3	1									1								0	1									1	5	
39										0										0								0										0	0	
41	13		1		1		1		7	23	10	1					3			14				2				2										0	39	
42	20		1				2		12	35	1				1		10			12				2				2	1									1	50	
43	7		1						2	10	2	1			1		2		1	7			1	1	2			4		1								1	22	
44	3		2					1		6										0								0										0	6	
49	1								1	2	1								1	2	1							1			1							1	6	
TOTAL	1471	61	274	67	63	106	44	57	58	2201	312	12	44	19	64	5	143	0	9	608	10	1	4	36	3	41	0	95	10	72	15	16	23	3	1	2	16	158	3062	
										(71.9%)										(19.9%)								(3.1%)										(5.1%)		

times). This follows directly from previous information, i.e., Distraction #11 occurred most frequently (24.7%) as did Coping Technique #11 (48.0%).

Since Coping Technique #11 occurred so often, its linkage with various distractions is common. By far the highest concentration of linkages is displayed in the upper-left portion of the data matrix. The sparseness of data in the other regions emphasizes the need to review the *effectiveness* of many linkages.

Since the indicators of effectiveness (*time, flow,* and *elimination*) are the outcome measures of the linkages, the emphasis of the remainder of this section is placed on the relative effectiveness of certain linkages or sets of linkages.

The indicators of effectiveness are illustrated by the three histograms in Figure 5. Aggregating the effectiveness ratings for all 3,062 linkages provided the data which are displayed in Figure 5.

The code for each rating is provided below each histogram. As a frame of reference, the median ratings for the aggregated data are listed below:

Md_{TIME} = 1.4; more than 5 seconds but less than 10.
Md_{FLOW} = 2.6; minor interruption to teacher and students.
$Md_{ELIMINATION}$ = 1.2; the distraction was usually eliminated.

Thus, a simplistic summary of this study (to this stage of data presentation) would be:

> *Usually distractions, occurring at a rate of approximately one per minute, are student generated (89.2 percent of the occurrences) and are coped with in an ongoing fashion by the teacher using a verbal coping technique (71.9 percent of the occurrences). Typically, the distraction and the coping technique utilized take between 5 and 10 seconds; distracting the teacher and the group she is working with; but the distraction is generally fully eliminated.*

Using a midrange estimate of time loss, the average distraction expended around 10 seconds (9.7) of instructional time.

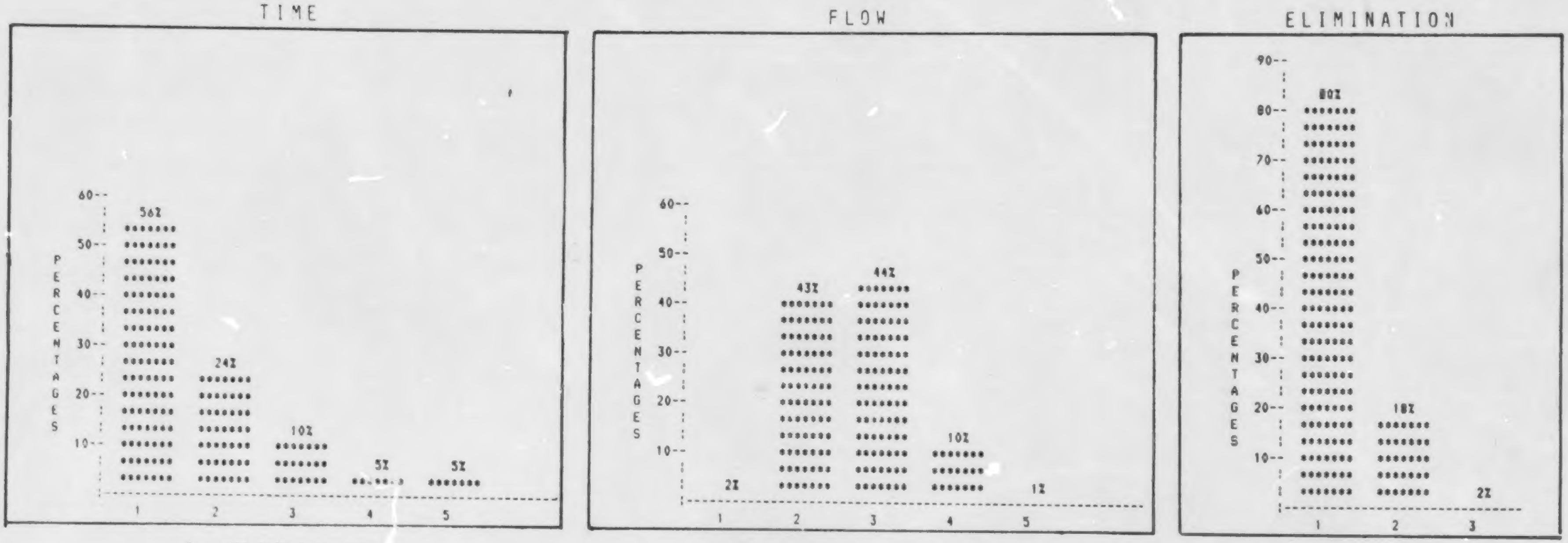
FIGURE 5

SUMMARY OF EFFECTIVENESS RATINGS

TEACHER(S) A - Z

OBSERVATION(S) 1-9

TOTAL NUMBER OF DISTRACTIONS = 3062



1 = LESS THAN 5 SECONDS
2 = 6 - 10 SECONDS
3 = 11 - 20 SECONDS
4 = 21 - 40 SECONDS
5 = MORE THAN 40 SECONDS

1 = NO APPARENT BREAK IN THE INSTRUCTIONAL FLOW (DISTRACTION IGNORED)
2 = DISTRACTION MAINLY TO TEACHER; DOESN'T BOTHER STUDENTS
3 = MINOR DISTRACTION TO BOTH TEACHER AND MOST STUDENTS IN THE GROUP
4 = INSTRUCTION DISRUPTED, BUT TEACHER BRINGS THE GROUP BACK
5 = INSTRUCTION COMPLETELY DISRUPTED; VERY DIFFICULT OR NOT POSSIBLE TO BRING THE GROUP BACK TO TASK

1 = APPARENT ELIMINATION OF DISTRACTION
2 = DISTRACTION CONTINUES AT A REDUCED (ACCEPTABLE) LEVEL
3 = DISTRACTION CONTINUES AND TEACHER USES ANOTHER TECHNIQUE

Relative Effectiveness of Linkages

From analysis of the effectiveness of linkages, the following were perhaps the most important findings:

- Coping Technique #21, *Teacher using body language, gestures and facial expressions*, appears to be a quick technique which did not significantly interrupt the flow of instruction.
- Other nonverbal coping techniques have effective *time* and *flow ratings* (e.g., #23 and #25), while still others do not (e.g., #24 and #27), especially if the teacher has had to relocate herself to reposition a student (#24) or to "fix" the problem herself (#27).
- Some coping techniques were effective in eliminating a distraction but took more time and interrupted the instructional flow (e.g., Linkages 12-13 and 11-27). Conversely, there were some coping techniques which were quick, but the distractions persisted (e.g., Linkages 14-21 and 16-23).
- In general, nonverbal coping techniques took less time and interrupted the flow less than verbal coping techniques and other preventative or combination techniques.

Instructional Time Loss

As discussed earlier, the amount of instructional time teachers lose to distractions was an important dimension this study sought to investigate. It was never the intent for observers to compromise the naturalistic nature of the study by using an engineer's time-study approach (i.e., stopwatches in hand, clicking on and off as distractions occurred and were coped with). Instead, data from the quantitative analyses and from the teachers' daily logs were to give estimates of time loss.

Table 4 provides a summary of the data obtained from these two sources. The display of information is divided into the two major sets; quantitative data and teacher log data. The appropriate statistics are provided for each teacher, both levels of teachers, and for all teachers combined.

Inspecting the All Teachers set of data in Table 4, the following findings may be noted: there were more than 40 distractions per observation (42.2); the average observation took 58 minutes; average time loss was almost 7 minutes (6.9); and by quantitative data estimates, the percentage of time lost due to distractions was 11.9 percent; teachers estimated an average time loss of 7.5 minutes which represented 12.9 percent of their reading time.

Regardless of data source, about one-eighth of reading instructional time is expended coping with distractions. According to the quantitative data, the percentage of time loss due to distractions decreases as the grade level increases, except for Level I, Teacher D (open classroom environment). That is, Teacher A (16.9%) > Teacher B (9.2%) > Teacher C (7.0%), for Level I teachers; and Teacher W (23.7%) > Teacher X (12.6%) > Teacher Y (8.2%) > Teacher Z (5.7%), for Level II teachers.

In summary, an average of 7 minutes was expended coping with distractions for each 58-minute observation. In other words, about one-eighth of each reading period in the primary classrooms of this study was devoted to distractions and their resolution. The teachers of this study doubt that the proportion of time loss can be reduced significantly, because most distractions are a function of student, context, and teacher-style factors over which the typical classroom teacher has little control.

TABLE 4

INSTRUCTIONAL TIME LOSS DUE TO DISTRACTIONS BASED ON QUANTITATIVE DATA AND TEACHER DAILY LOG ESTIMATES

TEACHER / GROUP	INFORMATION BASED UPON QUANTITATIVE DATA				BASED ON TEACHER LOG	
	AVERAGE NUMBER OF DISTRACTIONS	AVERAGE LENGTH OF OBSERVATION (IN MINUTES)	AVERAGE TIME LOSS (IN MINUTES) MID-RANGE ESTIMATE	PERCENTAGE OF READING TIME LOST DUE TO DISTRACTIONS	AVERAGE TIME TEACHER'S ESTIMATE	PERCENTAGE OF READING TIME LOST DUE TO DISTRACTIONS
A	59.4	58	9.8	16.9%	6.5	11.2%
B	38.9	60	5.5	9.2%	8.1	13.5%
C	29.9	56	3.9	7.0%	8.3	14.8%
D	37.7	56	6.2	11.1%	5.3	9.4%
LEVEL I	41.5	57.5	6.4	11.1%	7.0	12.2%
W	60.8	60	14.2	23.7%	14.3	23.8%
X	50.0	61	7.7	12.6%	4.1	6.7%
Y	27.3	55	4.5	8.2%	7.8	14.2%
Z	34.0	58	3.3	5.7%	5.4	9.3%
LEVEL II	43.0	58.5	7.4	12.6%	7.9	13.5%
ALL TEACHERS	42.2	58.0	6.9	11.9%	7.5	12.9%

Summary of Findings

Distractions

1. Many distractions occurred in primary grade classrooms during reading instruction. Nearly one distraction occurred per minute of instruction.
2. Distractions were mainly from student generated sources (89.2%) as opposed to school generated (6.4%), although a school generated distraction typically took more time.
3. Distraction Profiles were similar for primary grade level classrooms, especially grade level counterparts.

Coping Techniques

1. Teacher giving a direct command or instructions to a student who was causing a distraction was by far the most common coping technique (#11, 48.0%).
2. More than 70 percent of the distractions were dealt with by verbal techniques (71.9%). Nonverbal techniques accounted for 19.9 percent.
3. The higher the grade level, the more frequently the teachers used directive coping (#11).
4. The higher the grade level, the less frequently the teachers reminded the students of classroom rules (#13).

Linkages

1. Most of the linkages were associated with student generated distractions which were coped with by verbal techniques (67.1%).
2. Typically, a distraction and the corresponding coping technique exercised took under ten seconds; distracted the teacher and the group of students she was working with only slightly; and the distraction was fully eliminated.
3. Other findings regarding linkage effectiveness would be mediated by contextual factors as summary of findings was provided.

Discussion

The findings of this study suggest an emerging model of the nature in which teachers cope with classroom distractions and/or the kinds of coping techniques the teacher will use. For example, not only do students have certain characteristics (e.g., ability, aptitude, attitude, level of motivation) which may influence their relationship to the teacher, but some of these characteristics are further influenced by the interaction of teacher-context factors (e.g., the teacher's style and use of classroom management skills with respect to the grouping of students; arrangement of material resources; degree of individualization, etc.). Student, teacher and context factors may function independently, as well as be mediating variables which influence the learning process. They essentially circumscribe the whole process.

Some of the characteristics of students, teachers and the environment are stable while others are situational or temporary. A teacher's tolerance on a given day is a variable. However, a teacher may be characterized in terms of his or her overall style and management skills which are relatively stable over time. For example, a teacher may be considered easy-going and relatively tolerant of classroom noise. On a given day, however, the teacher may not have a high degree of distraction tolerance. Therefore, the general noise level of the students in the classroom may be a distraction on one day but not on another.

The characteristics of students, teachers, environment and their interaction influence the types of events as well as mediate their identification as potential distractions. The teacher's classroom style and management skills may prevent some potential distractions from occurring but encourage others. For example, some teachers will encourage student-to-student interaction (perhaps based on pedagogical reasons or some other rationale) which will generate a higher classroom noise level. If the noise level becomes a problem then the teacher will react to it with some coping technique. Noise level as a potential distraction is also affected by the characteristics of the student in terms of maturity, attention span and the degree to which the student knows and understands the rules.

Environmental factors might affect noise level, too. An open classroom, for example, may be more conducive to the free movement of students and their interaction and therefore generate a higher noise level than a contained classroom. That is, the teacher may not allow the students to interact as freely, or perhaps the students might have to ask permission to leave their seats in the contained classroom. In this case, the structure of the classroom environment might promote many student interruptions of the teacher as students ask permission to leave their desks to get materials.

In the contextual framework of the factors described above, a model of classroom teachers coping with distractions is presented in Figure 6.

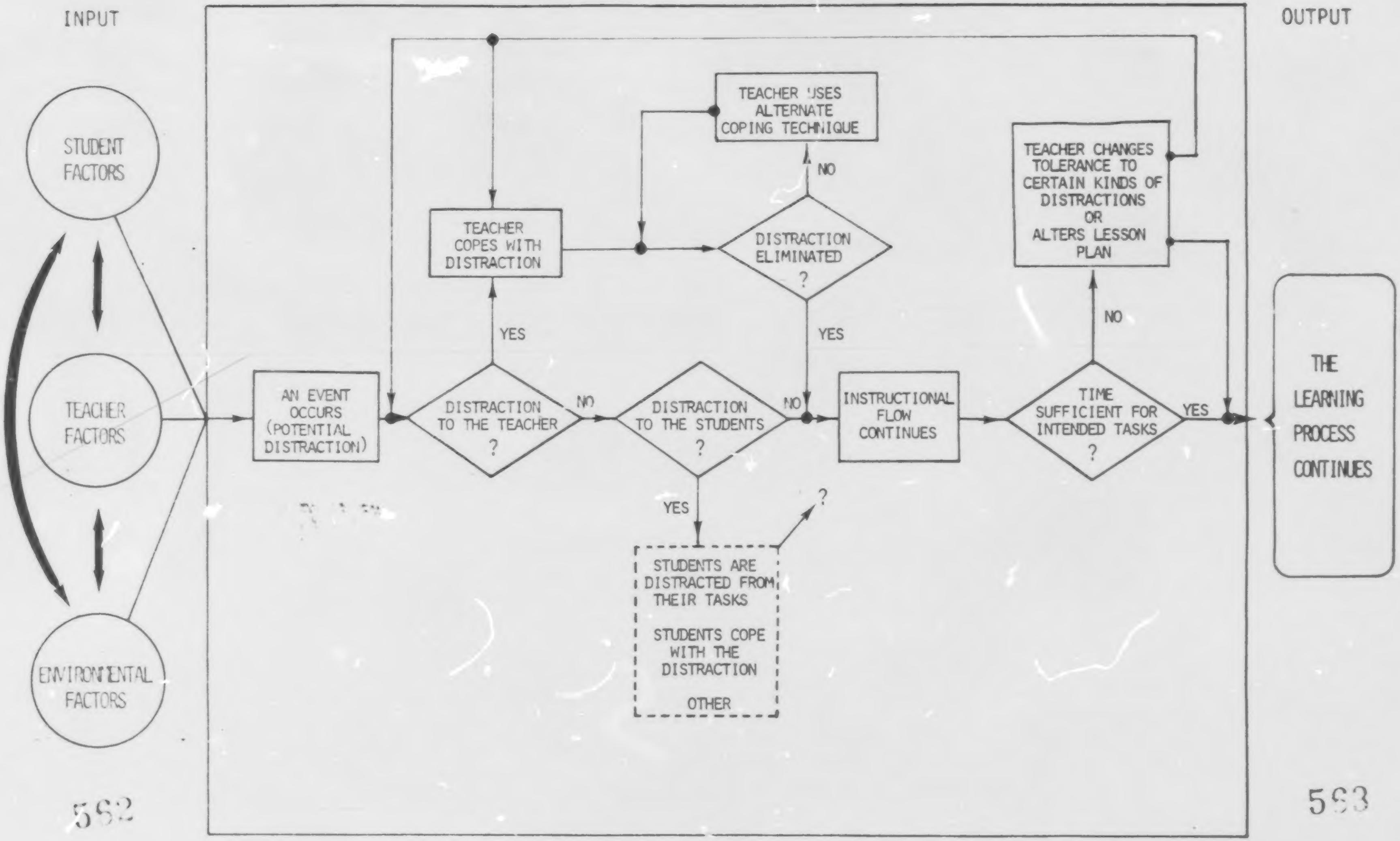
Conclusions

The key elements in the coping with classroom distractions model are the elimination of distractions through effective coping techniques in an attempt to maintain a continuous flow of instruction, thereby minimizing the time loss due to distractions. This study has isolated, analyzed and discussed several distraction-coping linkages with respect to these elements (*time, flow, elimination*). In some cases, preventative coping techniques are effective. Many of these preventative techniques (e.g., rearrangement of learning centers, delegating selected tasks to aides) can be adapted to a teacher's style and management skills. Other distractions are effectively eliminated by the teacher using ongoing coping techniques (e.g., a direct command, a gesture, touching a student's shoulder, ringing a bell).

The interrelationship between student, teacher and context factors in terms of distractions and coping techniques appears to be based on several clearly defined "assumptions". First, there are variations or differences between

FIGURE 6

A MODEL OF TEACHERS COPING WITH CLASSROOM DISTRACTIONS


INPUT
STUDENT FACTORS
TEACHER FACTORS
ENVIRONMENTAL FACTORS
AN EVENT OCCURS (POTENTIAL DISTRACTION)
DISTRACTION TO THE TEACHER ?
YES
NO
TEACHER COPES WITH DISTRACTION
DISTRACTION ELIMINATED ?
NO
TEACHER USES ALTERNATE COPING TECHNIQUE
YES
DISTRACTION TO THE STUDENTS ?
NO
YES
STUDENTS ARE DISTRACTED FROM THEIR TASKS
STUDENTS COPE WITH THE DISTRACTION
OTHER
?
INSTRUCTIONAL FLOW CONTINUES
TIME SUFFICIENT FOR INTENDED TASKS ?
NO
TEACHER CHANGES TOLERANCE TO CERTAIN KINDS OF DISTRACTIONS OR ALTERS LESSON PLAN
YES
OUTPUT
THE LEARNING PROCESS CONTINUES

between students. These variations may be in the form of motivation, ability, socioeconomic status, attention span, maturity, interests and many other social and personal characteristics. While some of these variables may be "controlled" in a given classroom (by age grading, tracking, ability grouping, interest grouping), most are beyond the control of the teacher and cannot be changed.

Second, there are variations in environments or classroom structures. Some classrooms may be open and flexible, while others may be contained within fixed structures. While there may be similarities and a high degree of overlapping, curricula in various schools may vary, as well as the way students are grouped. The degree to which the teacher has control over these environmental factors varies from school to school and even classroom to classroom. Many times a teacher has little control over whether he or she will have an open or contained classroom.

Third, there are variations among teachers in terms of their style of teaching and their management skills in the classroom. While one's style of teaching may reflect the teacher's personality and philosophy of education (which is often resistant to change), almost any teacher can incorporate new management skills in the form of coping techniques into his or her arsenal (as long as the techniques are compatible with the teacher's style and beliefs).

Because of these variations in teachers, students and classroom environments, it is difficult (impossible) to isolate specific techniques which will work in all cases. The main objective of this study is to make teachers aware of the factors involved and those distractions which may be coped with effectively. Though the teachers involved in this study found that *to change* is difficult, the first step in a process of change is an awareness of the need for change. There is a relationship between time and learning. If the teacher can become aware of effective coping techniques which maximize the time a student has for learning, then the student should learn more. Providing teachers a nonthreatening, nonevaluative means of becoming aware of their classroom distractions and how they cope is the key to initiating the change process.

CASE STUDIES

Introduction

Eight teachers took part in the study. Four (A, B, C and D) were members of the original IR&DT Team, and a second four (W, X, Y and Z) were recruited prior to data collection to expand the data base. They were selected because their teaching environments were similar to those of the original four IR&DT teachers.

In addition to acting as participant observers during the data collection phase of the study, the eight teachers also took part in the data reduction activities which took place during the summer months. The IR&DT team members worked full time throughout the summer, and the remaining teachers worked part time. The result of this work was a series of teacher-prepared case studies. The teachers worked on the case studies in grade-level pairs, so that four volumes were produced, one by the kindergarten teachers (A and W), one by the first grade teachers (B and X), one by the second grade teachers (C and Y), and one by the third/fourth grade teachers (D and Z). The criteria for these case studies were that they should be informative, insightful and interesting, especially to other teachers. The format of each one involved a section on context information (school, teacher, students, classroom), one section discussing the findings, and a final section called "Teacher Insights" to insure that each teacher would have an opportunity to express her feelings and thoughts about participating in the study.

Kindergarten Teachers (A & W)

Context Information

Teacher A's school had a fall enrollment of 401, and during the rest of the school year 145 additional students enrolled and 120 transferred out. Her class had 30 children, 17 boys and 13 girls. Of these, 20 were Black, 9 were Hispanic, and one was Asian. Seven received English as a Second Language (ESL) instruction. The majority of the students were low achievers but generally seemed to enjoy school. Teacher A had been teaching for seven years, all at the same school.

Teacher W's school had a fall enrollment of 420, with 57 additional students enrolling and 79 transferring out during the rest of the school year. Her class had 29 children, 16 boys and 13 girls. Of these, 27 were Black and 2 were Asian. One of the Asians was tutored in ESL. Teacher W had been teaching seven years, all at the same school.

Findings

Student-generated distractions were most common for both teachers. Distraction #11, *Teacher interrupted by students*, #14, *General student noise*, and #16, *Student's physical position or location* were most frequently encountered.

Coping techniques were also similar for both teachers, #11, *Teacher giving direct command*, #13, *Teacher clarifying or reminding students of rules*, and #21, *Teacher using nonverbal body language gestures* being most frequent. Teacher A had a wider variety of techniques, which seems to have led to a greater success in dealing with distractions.

Linkages, too, were similar for both teachers. Most common was Coping Technique #11 to deal with Distraction #11. Teacher A tended simply to call out a child's name, while Teacher W would follow the name with a statement about what the child should be doing. This accounted for more off-task time for Teacher W.

Teacher A's Insights

Her insights covered three topics: her feelings about research in general, her reactions to the findings, and her feelings about the project itself.

She had previously believed that educational research had little to offer the classroom teacher, but involvement in this project changed her mind on that. From the data analysis, she recognized the success of her coping techniques, was inspired to work more with nonverbal methods, and learned that a wide variety of coping techniques may be more successful than frequent use of a single technique.

She enjoyed the opportunity to observe other classrooms, and felt that she and Teacher W would have benefited from visits to each other's classroom. She was glad to have been working in the study from the outset, and felt that the four latecomers were not so involved. The study demanded more time and effort than she had expected.

First Grade Teachers (B & X)

Context Information

Teacher B's school had a fall enrollment of 401, and during the rest of the year 145 additional students enrolled and 120 transferred out. Her class had 29 children, 14 boys and 15 girls. Of these, 24 were Black, 3 Hispanic and 2 Asian. One of the Asians, from Laos, was non-English speaking and received ESL training as did the 3 Hispanics. Teacher B had been teaching for eight years, all at the same school.

Teacher X's school had a fall enrollment of 420, and during the rest of the year 57 were enrolled and 79 transferred out. Her class had 29 children, 8 second graders (4 boys and 4 girls) and 21 first graders (11 boys and 10 girls). Of these, 27 were Black and 2 were Hispanic. Teacher X had been at this school for three years.

Findings

Student-generated distractions accounted for about 90 percent of all distractions in both classrooms. Distractions #11, *Students interrupting the teacher*, #15, *Students not concentrating on classroom activities*, and #13, *Student-student interactions which are disruptive* were most frequently encountered.

Coping Technique #11, *Teacher giving direct command or instruction*, was most common to both teachers (circa 50% of Teacher X's copings and 40% of Teacher B's), and was judged effective. Other verbal techniques accounted for about 20% of the total for each teacher and were effective, although the data were often sparse. Nonverbal techniques accounted for less than 15% of each teacher's total. Number 27, *Physically resolving a distraction*, was most common, but caused considerably more disruption to the flow of Teacher X's class than to that of Teacher B.

Four linkages were consistently used by both teachers. The direct command was linked with the following four distractions: students' verbal interruptions (#11), student-student interaction (#13), students not concentrating on task (#15), and students' physical position or location (#16). Teacher X used each of these linkages more than Teacher B and took less time, but Teacher B showed more elimination of distraction. Teacher B used more body language.

Teacher B's Insights

Her insights are devoted mainly to her concern for the invalidity of the quantitative data. First, she felt that she had used more coping techniques which involved touching the children than had been recorded. The ethnographic data seemed to support her feelings. She also felt that she ignored more distractions than had been noted. This, too, was supported in the ethnographic data, which showed she used ignoring strategies effectively. Similarly, she observed that the quantitative data drew profiles of Teachers B and X which showed them to be alike, when observers noted that they were very different. Her previous skepticism of research findings was confirmed by her experiences with these data, and the importance of ethnographic reports was realized.

Teacher B felt the feedback she gained, the opportunity to change the management of her classroom and to state her own insights made the research valuable. She also noted that data analysis and report writing demanded too much of her time.

Second Grade Teachers (C & Y)

Context Information

Teacher C's school started the year with 362 students, increased to 392 within three weeks and later reached 448. Classes had to be reorganized twice, and the constant movement resulted in a 49% transiency rate for the year. Her class contained 29 children, 16 boys and 13 girls. Of these, 22 were Black, 5 Hispanic, 1 White, and 1 Asian. One Hispanic and 1 Asian (from Laos) received ESL instruction. During the observation period four children were removed, reducing enrollment to 25. The majority of students were low achievers, due partially to absenteeism and lack of parental support. Teacher C had taught for three years, two of which were at this school.

Teacher Y's school had a fall enrollment of 420, and during the rest of the year 57 additional students enrolled and 79 transferred out. Her class started the year with 23 boys and 8 girls, but had changed to 18 boys and 10 girls by January. Of these, 3 were Samoan and the rest Black. More than half the students were reading below grade level or not at all. Teacher Y had been teaching five years, all at the same school.

Findings

Student-generated distractions were most common for both teachers (Teacher C 88%, Teacher Y 91%). For both teachers, student interruptions (#11) were very frequent, and students not concentrating (#15) was also common. Student-student interactions (#12) were also disruptive to both teachers; however, considerably more so for Teacher Y.

Coping techniques were very similar for the two teachers. Direct commands (#11) were used to deal with the majority of distractions by both teachers. However, in Teacher Y's class the distraction continued at a reduced rate 25% more of the time, indicating that Teacher Y had a greater tolerance for distraction. Clarifying or reminding of rules (#13) was used just under 10 percent of the time, and nonverbal techniques were effective for both teachers. Teacher C used a wider variety of the techniques than Teacher Y, mainly because the aide in Teacher Y's class handled many of the individual disruptions.

Teacher C's Insights

Teacher C had comments to make about each phase of the project in general. She found the experience a very valuable one and concluded that teachers could learn a great deal about their own styles and their classrooms by participating in such a study. However, she felt an immense amount of time was spent, and other commitments would have been impossible to pursue. In particular, Teacher C felt that observation of other teachers' classrooms was very beneficial, as was her collaboration with the other teachers at her school involved in the project. She noted that her own recordings suffered from being made in the evening rather than directly following the observation period. She found some discrepancies in the coding of the quantitative data relating to category choice of distractions or coding techniques, and expressed surprise at some of the findings.

Teacher Y's Insights

Teacher Y was most impressed by her increased awareness of distractions and how she coped with those that participation in the study aroused. In particular, she was surprised that distractions apparently stemmed from the same few students, that she was often so serious in the classroom, and that she relied so heavily on her aide. She has been inspired to make changes in her class to reduce distractions. Like other teachers, she noted the demands the study made on her time.

Third & Fourth Grade Teachers (D & Z)

Context Information

Teacher D's school was opened in 1976 and, with over 1300 students, is one of the largest in the district. Her double-sized class contained 60 students, primarily white, of whom 45 were gifted. Enrollment was stable. Teacher D had been teaching for 14 years, of which the previous three were with the gifted program.

Teacher Z's school had been open four years. Enrollment was 403 at the beginning of the year and remained fairly stable. Her class consisted of 11 boys and 16 girls, with one transfer in during the study. Of these, 12 were gifted and the rest were high achievers, possibly excepting two. One was Black, two Asian, and the rest white. Teacher Z had taught for 14 years, of which her previous two were at this school

Findings

Distractions were very different for the two teachers, reflecting differences in physical classroom setup and instruction style. For Teacher D, distractions were largely caused by out-of-school and school-generated factors beyond the teacher's control (22.4%). In Teacher Z's class, only 9.4% of her distractions were of these types. Her most frequent distractions were caused by children needing more work. Distraction #11, *Interruptions from students*, was common for both teachers.

Coping techniques were also different for the two teachers due largely to their differing expectations. In Teacher Z's class, coping techniques were used to keep the children quiet and busy. Direct commands (#11) were used 63 percent of the time. Teacher D's reading class was very flexible and interruptions by the children were often used for impromptu learning discussions. She made more use of students to solve problems (#36), and of her aide and teaching partner (#34) than Teacher Z.

The most consistent linkage for both teachers was direct command to student interruption (#11/#11). This was quick and effective. Teacher Z used the ignoring technique (#25) to deal with student distractions more than any other teacher in the study.

Teacher D's Insights

Sometimes Teacher D disagreed with the coder's interpretation of her coding techniques, and often she was surprised to read from the ethnographers' protocols that she had done or said certain things. In general she felt she benefited a great deal from the study, but suffered from being isolated from the other participating teachers (she was in a different school), sometimes had difficulty scheduling observation during "typical" lessons, and found the work more time-consuming than she expected.

TRAINING REPORT

Introduction

This phase of the study reports on the activities undertaken in the inservice class offered by the trainer/developer and gives a preliminary evaluation of the impact of the class upon the participants.

The objectives of the training program were: to introduce the participants to IR&DT design and strategy; teach them participating skills in the interactive process; familiarize them with the range of common classroom distractions and coping strategies; teach them functional observation skills; and recognize the IR&DT inservice design as effective in meeting teacher needs relative to classroom problems and management.

Twenty-three participants were selected for the five-week course on the basis of there being at least two per site (to promote interaction) and their willingness to observe and be observed.

Description of Activities

Session One

After pretests and a general introduction, participants were asked to list and then discuss the major distractions they experienced in their classrooms. They were then shown a five-minute videotape of Teacher C's class and asked to note the distractions which occurred. Each teacher was then asked to reconstruct the events from his or her notes, and describe the coping strategies used. This was performed with difficulty. Schedules were then drawn up for team partners to observe each other's classroom on four separate occasions.

Session Two

The purpose of this session was to finalize matrices of distractions and coping techniques, introduce the quantitative data observation form, and use videotapes to gain practice in observation and coding. Time was spent on coding difficulties and in relating teacher-identified distractions to existing lists.

Session Three

The focus of this session was ethnographic notation. An introduction to the method was given, examples produced, and opportunities afforded to compare them with quantitative records of the same observation period. Participants were requested to make some practice ethnographic notes in an unfamiliar classroom prior to Session Four.

Session Four

This started with a discussion of the practice observations. The trainer/developer then spent some time clarifying examples as to the coding, before having each member code an actual observation whose coding column had been blanked out. This was repeated three times, with a reliability sampling taken of the final set of events.

Sessions Five-Eight

These sessions were held during the two weeks of actual observations and followed the same format. Half of each session was spent clarifying coding, transferring data to mark-sensed cards, and verifying event maps of previous observations.

In the fifth session the central office administrator visited and joined in the discussions, the reliability sample was reviewed and the original group's "Distraction Profile" was introduced to the group. In the sixth session tentative findings of the original study were presented, and some aspects of this were studied in depth at Session Seven. Session Eight included debriefing and a look at some of the teacher case studies.

Session Nine

This was the first opportunity for the group to look at their own quantitative data, and a Teacher Daily Evaluation Form was developed.

Session Ten

Each participant received his or her own set of linkage printouts. Time Loss figures were computed, and a discussion took place where participants evaluated the growth of their observational skills.

Evaluation

Fifteen participants concluded that the inservice activity met their needs "very much," and one that it was "somewhat" adequate.

Implications

Examination of the course provided recommendation of the following changes:

1. Use of a technician for data processing in place of the researcher
2. Spend less time completing the mark-sensed cards and more analyzing the "rough" observation forms
3. Incorporate an extensive revision of Sessions One and Two to include forms on ethnographic techniques.

The course has been offered a second time in the Spring of 1979 for those unable to get into the first course. The school district's staff development coordinator has scheduled the course to be offered again in the Fall of 1979 with the trainer-developer and one of the teachers from the IR&DT team teaching the course.

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Appendix B

VERMONT ABSTRACT

AN EXPLORATORY STUDY OF THE POSSIBLE RELATIONSHIPS BETWEEN TEACHER'S MOOD AND TEACHER'S SUPPORTIVE INSTRUCTIONAL BEHAVIOR

ABSTRACT

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Report IR&DT 79-8

IR&DT is an activity of the Far West Laboratory for Educational Research and Development and supported by the National Institute of Education, Department of Health, Education, and Welfare, begun under Contract NE-C-00-3-0108 and continued under Grant OB-NIE-G-78-0103 and Grant OB-NIE-G-78-0203. The opinions expressed in this publication do not necessarily reflect the position or policy of NIE and no official endorsement by NIE should be inferred.

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INTRODUCTION

The research reported here was conducted by the Vermont Interactive Project research team, formed in August 1977, to carry out a program of interactive research and development on teaching according to the ideas of Ward and Tukunoff (1975). The team included one researcher, one trainer, and three primary grade teachers from a rural Vermont school district.

The first task for the team was to search for and identify a research question. This process went through four stages over seven months. The question that the team finally selected was:

> *Are there relationships between the mood of the teacher and the teacher's classroom supportive instructional behavior? If so, what it the nature of these relationships?*

"Mood" was defined as a state, not a trait. The instructional behaviors selected by the team to be studied for their possible connection with mood were called supportive instructional behaviors (SIBs). A set of such behaviors was selected from existing research on teaching.

Concurrent with conducting their research, the team designed a training program for other teachers. This featured topics outside their research as well as data collection strategies developed by the team to inquire into their question.

Research was conducted late in Spring, 1978 and data were analyzed and interpreted late in the summer and reports written in early fall. The training design was completed and submitted for NAP review in early summer and conducted in the fall. Three major reports summarize the Vermont IR&DT team's r and d outcomes: a Formal Research Report, which summarizes conduct of the research and presents findings, interpretations, and conclusions; Nine Case

Studies for the teachers who served as research subjects, each of which describes the context of teachers' classrooms and discusses findings for each; and a Formal Training Report which describes the training program designed adn conducted for other teachers and presents results of training.

THE FORMAL STUDY

Method

Subjects

Nine second grade teachers were selected and agreed to take part in the study, recruited through various school-district contacts of the research team members. The teachers represented six different schools in three districts, one urban, one rural and one suburban. They were paid fifty dollars in return for allowing two separate days of observation, and three one-hour interviews with the observer. They also completed three questionnaires. The teachers were all female with a variety of background experience.

Research Questions

Within the scope of the general research question, six specific questions were identified:

1. What were the relationships existing between supportive instructional behaviors and general mood scores for lessons where the general mood score was highest and lowest for the teacher?

2. What relationships existed between supportive instructional behaviors and general mood scores when individual supportive instructional behaviors were ranked highest and lowest?

3. What were the relationships existing between supportive instructional behaviors and recalled mood for lessons where recalled mood was highest and lowest?

4. What relationships existed between supportive instructional behaviors and recalled mood for lessons where supportive instructional behaviors were ranked highest and lowest?

5. Did shifts of mood occur during the observed lessons?

If they did, what patterns of supportive instructional behaviors occurred before, during and after the shifts of mood?

6. What were the relationships among supportive instructional behaviors during the lessons taught by each teacher?

Specific data sets were required for each question, and these were generated from both qualitative and quantitative sources.

Non-participant Observers

Six persons were initially screened. They were introduced to observation procedure and did a trial classroom observation. Teachers then marked the protocols for perceived accuracy, and on the basis of these rankings, three were selected. They attended training sessions, using videotapes of classroom lessons.

Supportive Instructional Behaviors

Nine SIB's were identified to be assessed during each observation session. They are defined as follows:

1. Acceptance: constructive reactions to students' feelings and attitudes, showing that the teacher is aware of student's emotional needs and uncritical of students' behavior.
2. Attending: teacher actively listens to the student, acknowledging verbally or with facial expression.
3. Conviviality: warmth and good feelings between all in the classroom, characterized by smiling, laughter, and a tension-free atmosphere.
4. Cooperation: students help each other, cooperate with the teacher and show affection for each other.
5. Engagement: students appear involved in learning activities, look busy and eager to work, and are happy on responding correctly.
6. Monitoring: teacher contacts students regularly, checks their progress and is sensitive to their needs.

7. Pacing: teacher monitors students completion of tasks before proceeding, and adjusts pace to learning rate.

8. Promoting Self-sufficiency: students take responsibility for their own classwork and belongings, and they are in charge of certain clerical and housekeeping jobs.

9. Optimism: teacher expresses positive, pleasant or optimistic attitudes and feelings.

Data Collection and Analysis

Data were collected between May 15 and June 5, 1978. Each teacher was observed on four days, with the first day used only as a practice session. First of all, the teacher completed the Mood Adjective Checklist (an adaption from Nowlis, 1965) for assessment of her current mood. Then the observer carried out formal observations of the teacher's reading lesson and the "most difficult time of the day" as defined by the teacher. The observer focused on the teacher's interaction with the children she was instructing, and tape-recorded the observations directly after each session. At the end of the day, the observer interviewed the teacher, and this was also tape-recorded.

During the month of July the data were reduced. The classroom protocols were coded for presence or absence of SIB's and ranked. The mood checklists were scored and an average general mood score for each teacher was calculated by averaging the general mood scores for all six lessons taught by each teacher.

The data were then analyzed according to each of the six specific research questions. For question 1, the distinction of SIB ranking for the lessons of highest and lowest general mood scores was examined and related to the contest of the lessons. For question 2 a table was generated which listed each SIB and the lesson for which it was ranked highest and lowest. General mood for these lessons was also rated, and whether this was higher or lower than average, thereby giving indication of the relationship between SIB's and general mood. For question 3 analysis was carried out by determining the SIB rankings for lessons of highest and lowest recalled mood. Comparision of data in questions 4 and 5 enabled determination of the relationship between SIB's and general or recalled mood. For question 6, two new tables were generated. The first displayed the distribution of other SIB's when a given SIB was ranked highest or lowest. The second, derived from the first, displayed direct and indirect relationships between SIB's.

Case Studies

The nine case studies represent the largest section of the original report and no attempt will be made here to summarize all the information contained in them. Instead, reports will be given to indicate to the reader the nature of the findings from these case studies.

Each one is presented in three sections. The first examines the context of the classroom under observation, the second analyzes the data in terms of the six research questions, and section three reports the findings.

Context information for each teacher includes descriptions of the school and immediate environs, details of the classroom including a flow plan, information on the students, information on the teacher and her opinions about mood, and a description of the instructional setting.

A detailed description is then given of the procedures for analysis of the data for each research question, illustrating where appropriate with excerpts from observers' protocols or researcher interviews, and tabulations of the data.

There follows a brief summary of the reports of the findings for each researcher.

Teacher F

This teacher did not think about her moods very much with the result that the relationship of mood to SIB's was very inconsistent. She always felt worse (less industrious, less affectionate, less refreshed, less gentle) in the afternoon during her "difficult time" (DT) lesson than during her reading time (RT) lesson in the morning.

Teacher F evidenced one mood shift on the day of her lowest mood score. In general she had difficulty identifying her moods, and noted that a free period after lunch served to improve her mood.

Analysis of the relationships among SIB's was especially revealing for two particular lessons. One postive cluster was observed during a DT lesson, which ran smoothly with a minimum of disciplining. The second lesson, characterized by a high degree of interruption and rancor, exhibited a negative cluster of seven SIB's.

Acceptance, engagement, monitoring and promoting self-sufficiency were in direct relationship. Attending had an indirect relationship to convivial-ity and optimism.

Teacher G

For teacher G, times of high general mood were generally times of high supportive instructional behavior and vice versa. No mood shifts were recorded during the observation period, although observers noted fluctuations in mood, many instances of teacher feeling angry at the children, and mood changes reflected by the adjective checklist.

Promoting self-sufficiency, acceptance, attending, conviviality, pacing and optimism were either present or absent together, depending on whether or not the teacher was disappointed with her children. Her critical nature caused monitoring to have only indirect effects on promoting self-sufficiency and optimism.

Teacher H

When this teacher was feeling good, her SIB's were high. When she was not feeling so well, some SIB's were low. She had one mood shift, from negative to positive, that seemed a result of her own awareness and effort to improve her mood. Her classroom setting was characterized by a stability that was reflected in the consistent relationships among her SIB's. Every SIB was in direct relationship to at least one other.

Teacher I

Teacher I's general mood declined every afternoon, possibly because she felt tired after lunch. However, she did not let her poor mood interfere with her supportive behavior, for on her lowest mood day she produced the greatest number of high SIB's. Similarly, her control gave rise to no mood shifts.

When acceptance or conviviality ranked high, a large cluster of other SIB's also ranked high. These clusters were ranked with a lesson the teacher enjoyed presenting. A testing lesson gave rise to a negative cluster of SIB's.

Teacher J

Mood and SIB's were related consistently. Three SIB's were ranked high when mood was highest, and six were ranked low when mood was lowest. Sixty-seven percent of SIB's were ranked lowest on days when mood was below average. One mood shift occurred during a DT lesson when she had forgotten to provide help to one activity group, and this caused her mood to drop having an adverse effect in SIB's.

Significant numbers of relationships among SIB's, both postive and negative, revealed Teacher J's highly patterned and consistent teaching style.

Teacher L

General mood was not related to specific SIB patterns for teacher L. Her recalled mood suggested some relationships, indicating that her classroom behavior did not reflect her actual mood. One dramatic mood shift, from positive to negative, occurred when students had been left to monitor themselves and failed to do so giving rise to a power struggle.

Because her teaching style involved largely independent student activity, interrelationships among SIB's did not reflect interaction between teacher and large groups of students.

Teacher M

Teacher M's mood was affected largely by external factors, so SIB's generally reflected the nature of the specific lesson activities. One mood shift occurred, from negative to positive, probably triggered by the success of the lesson. Teacher M was aware of her moods and did not let them affect her class demeanor. SIB's varied in relation to each other as a function of the type of lesson the teacher was conducting.

Teacher N

Teacher N's control over her mood was such that differences between high and low mood were small. Thus little relationship existed between mood and SIB's. No mood shifts were evident, and analysis of relationships among SIB's point to the conclusion that this teacher used a wide variety of teaching styles.

Teacher O

Instructional style accounted more for SIB variations than did general mood. She had no mood shifts. During group projects teacher O exhibited a teaching style characterized by low monitoring, attending and engagement, and high conviviality, cooperation, and self-sufficiency. Directed reading reversed th low factors.

Results

A ranking of the lessons for each teacher for each SIB appears in Table 1. Ties were force-ranked by the coder.

General mood scores for each teacher and each lesson appear in Table 2.

The results are discussed in relation to the six research questions.

Question 1.

What were the relationships existing between supportive instructional behaviors and general mood scores for lessons where the general mood score was highest and lowest for the teacher?

There were no consistent relationships because of the idiosyncratic ways the teachers dealt with their moods. Six teachers began this most difficult lesson in moods equal to or lower than that for their reading lessons, suggesting that time of day affected their mood. Instruction differences were dependent upon teachers' response to moods. Four teachers, aware of their moods, adjusted their reading methods so as not to affect instruction.

Question 2.

What relationships existed between SIB's and general mood scores when SIB's were ranked highest and lowest?

The percentages shown in Table 3 indicate the following results:

1. Teachers G and M were most sensitive to the relationship between their SIB's and general mood. Over half their SIB's were ranked highest on days when general mood was higher than average, and over half were ranked lowest on days when general mood was lower than average.

Table 1. SIB rankings for each lesson taught by each teacher

Supportive Instructional Behavior Lesson	Acceptance						Attending						Cooperation					
Teacher	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3
F	5	3	4	6	2	1	2	1	3	5	6	4	6	3	5	4	2	1
G	4	2	3	6	1	5	4	1	3	5	2	6	2	3	4	6	1	5
H	6	1	4	3	5	2	6	4	5	2	3	1	2	3	1	5	6	4
I	3	6	1	5	4	2	6	5	4	2	3	1	4	5	1	3	6	2
J	4	2	5	1	3	6	6	2	5	1	3	4	3	1	2	4	5	6
L	2	5	6	3	4	1	6	1	3	5	4	2	3	6	2	1	4	5
M	3	5	1	2	4	6	6	5	3	2	1	4	2	3	1	4	5	6
N	4	1	6	2	3	5	6	4	5	2	3	1	5	4	3	1	2	6
O	5	2	4	1	6	3	6	4	2	1	5	3	5	1	6	2	4	3

Supportive Instructional Behavior Lesson	Conviviality						Engagement						Monitoring					
Teacher	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3
F	4	5	6	3	2	1	5	2	4	6	3	1	3	2	4	6	5	1
G	1	2	3	5	4	6	2	1	6	3	5	4	5	2	6	3	4	1
H	5	2	4	3	6	1	4	1	2	3	6	5	6	4	3	5	2	1
I	4	6	3	5	2	1	1	5	3	4	6	2	2	5	6	4	3	1
J	5	2	6	1	4	3	5	1	4	3	2	6	4	5	3	1	2	6
L	2	4	6	3	2	1	3	6	4	2	1	5	5	3	4	2	6	1
M	2	1	4	3	5	6	3	5	1	4	2	6	5	1	6	3	4	2
N	4	3	2	5	6	1	4	3	1	5	2	6	6	2	4	3	5	1
O	3	2	6	1	5	4	6	1	2	5	4	3	6	5	1	3	2	4

Supportive Instructional Behavior Lesson	Optimism						Pacing						Promoting Self-Sufficiency					
Teacher	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3	R_1	DT_1	R_2	DT_2	R_3	DT_3
F	4	5	6	3	2	1	2	4	5	6	3	1	4	2	3	6	5	1
G	4	2	1	5	3	6	2	1	4	5	6	3	3	1	2	4	5	6
H	3	2	5	6	4	1	6	5	3	4	2	1	2	4	3	6	5	1
I	1	5	3	6	2	4	6	4	2	3	1	5	6	2	1	4	3	5
J	2	3	6	1	4	5	3	4	6	2	1	5	1	3	4	5	2	6
L	2	3	5	6	2	1	1	4	3	2	6	5	4	6	3	2	1	5
M	6	1	5	4	2	3	3	1	4	2	5	6	3	6	1	2	5	4
N	6	2	4	3	5	1	5	1	4	3	6	2	6	2	4	3	5	1
O	3	2	4	1	5	6	6	5	4	2	1	3	1	4	6	3	5	2

Table 2. General mood scores for each lesson taught by each teacher

Teacher	Lesson						Average
	R_1	DT_1	R_2	DT_2	R_3	DT_3	
F	2.36	2.23	2.23	2.23	2.59	2.23	2.31
G	2.32	2.23	2.45	2.27	2.23	2.55	2.34
H	2.68	2.45	2.36	2.50	2.77	2.64	2.57
I	2.41	2.10	2.45	2.14	2.32	2.23	2.28
J	2.86	2.68	2.50	2.32	2.41	2.36	2.52
L	2.91	2.82	2.91	2.91	2.77	2.82	2.86
M	2.73	1.95	2.23	1.64	2.55	2.36	2.24
N	2.64	2.73	2.86	2.68	2.68	2.68	2.71
O	2.27	2.27	2.50	2.27	2.41	2.23	2.33

Table 3. Percentage of SIBs ranked highest (and lowest for a given teacher when the general mood score for that teacher was greater (or less) than that teacher's average general mood score

	Percentage of SIBs Ranked Highest When GMS was Greater Than Average	Percentage of SIBs Ranked Lowest When GMS was Less Than Average
L	44%	67%
M	89%	78%
F	22%	100%
H	78%	33%
J	44%	67%
N	11%	67%
G	67%	78%
I	89%	33%
O	44%	78%

2. Teachers L,F,J,N and O were more sensitive in their SIB's to their days of low general mood. A greater percentage of their SIB's were ranked lowest on low mood days than were ranked highest on high mood days.
3. Teachers H and I were more sensitive to their days of high general mood for the opposite reason.

Other teacher differences were revealed in a comparison of the individual mood scores. These are shown in Table 4. Six SIB's (attending, conviviality, engagement, pacing, promoting, self-sufficiency, optimism) were directly linked to the mood of over half the teachers in the study. When these SIB's were ranked highest, general moods were ranked better than average, and when they were ranked lowest, general mood scores were lower than average.

Question 3.

What were the relationships existing between SIB's and recalled mood for lessons when recalled mood was highest and lowest for the teacher?

Question 4.

What relationships existed between SIB's and recalled mood when SIB's were ranked highest and lowest?

These questions are discussed together because "recalled mood" proved to be a highly unreliable variable. In general, teachers had difficulty recalling lessons of highest or lowest mood, and when a mood was recalled, it was for the whole day. This is consistent with the definition of mood stipulated in this research.

Question 5.

Did shift of mood occur during the observed lessons? If so, what patterns of supportive instructional behaviors occurred before, during, and after shifts of mood?

Seven mood shifts occurred during the study, six of which were during the most difficult time for the respective teachers. All shifts occurred for

Table 4. Percentage of teachers whose SIBs were ranked highest (or lowest) when their general mood was greater (or less) than their average general mood

	Percentage of Teachers whose general mood rating was greater than average when the given SIB was ranked highest	Percentage of Teachers whose general mood rating was less than average when the given SIB was ranked lowest
acceptance	44%	56%
attending	67%	67%
conviviality	67%	78%
cooperation	67%	44%
engagement	67%	78%
monitoring	44%	56%
pacing	56%	56%
promoting self-sufficiency	56%	56%
optimism	56%	56%

lessons where the teachers were in a mood that was less than their average general mood.

Question 6.

What were the relationships among supportive instructional behaviors during the lessons taught by each teacher?

Acceptance was found to have been related to the greatest number of both highest and lowest ranked SIB's. Promoting self-sufficiency tended often to move counter to other SIB's, ranking high when four others ranked lowest and low when monitoring ranked highest. Promoting self-sufficiency provided the only indirect relationship (with monitoring) across all teachers, while twelve direct relationships were rated. This indicated that SIB's tend to move in accord rather than discord.

Discussion

The effects of teacher mood had previously received little attention from educational researchers. Teachers, however, did seem to be concerned with this problem. This study represents an initial attempt to explore the potential relationships between mood and teaching behavior.

Table 2 shows clearly that differences of general mood scores within and between teachers were not great. This may have been a result of the averaging procedure, as the interview protocols revealed that the teachers did experience variation in mood. The discussion will concentrate on the implications of the findings for teachers, administrators, teacher educators and researchers.

Implications For Teachers

Mood seemed to be an identifiable phenomenon, but recalled mood was not useful as teachers had difficulty recalling the mood of a specific lesson taught.

over a span of ten to fifteen days. A large number of factors contributed to mood, some related, some unrelated to school. Some factors could not be influenced (e.g., sick children, weather) whereas others were reversibile (e.g. extra duties, time off during the day).

In general, mood scores dropped as the day progressed, due to fatigue, frustration, preoccupation of the morning's events, and for some, anger. Mood seemed to be related to several supportive instructional behaviors identified in the study, and mood shifts seemed to be more frequent when teachers' general mood was low.

Teachers were divided as to whether or not mood affected their teaching behavior. For those who were not sensitive to their own moods and able to adapt their teaching behaviors, it might be possible to use the kinds of information gained from this research to help them. By pointing out the supportive behaviors prevalent during their times of highest mood, teachers might be able to alter their behaviors during other times to represent this pattern. If these behaviors are successful, they might have the effect of altering the teacher's mood. Additionally, these teachers might be made aware of the SIB's that were most often linked to positive moods in general, and encouraged to make more use of them. In sum, it is suggested that teachers can become more aware of their own power to influence what occurs in their classrooms if they become more aware of their moods and accompanying instructional strategies.

Implications For The Administrators

Administrators might affect the school climate in a number of ways. Since the teachers indicated that they felt better about their work if they are calm, rested and relaxed, administrators might see reason to ensure that teachers have a time period in excess of half an hour when they can take a break from school activity. Attention might also be paid to the role of intrusions in classrooms, as teachers were disturbed by disruptiveness caused by students leaving the room to work with specialists or special interest assemblies. Informal chats with teachers to see how things are going may also halep put teachers in a better mood. Monitoring was an SIB not related to teacehrs' positive mood states. The national call for accountability has served to increase work at the expense of SIB's found to contribute to teachers feeling positive about their work. If monitoring can be done in a style that exhibits high levels of acceptance and conviviality, then teachers' moods may be maintained at a position level.

Implications For The Teacher Educator

It is suggested that both teacher trainers and inservice trainers might make their students aware of the various supportive instructional behaviors, and the ways that teacher mood can affect life in the classroom. Students should learn what works for them and be helped to learn how to repeat these techniques with increasing frequency. A subsequent step might be to train teachers to help each other accomplish these tasks.

Implications For The Researcher

The variation of findings for each teacher raises the issue of the applicability of combined results for individuals, but offers no solution. However, the study does suggest hypotheses for future research, and underlines the value of interactive research, naturalistic observation, and combinations of qualitative and quantitative data.

TRAINING REPORT

Introduction

This phase of the study reports on the activities undertaken in the training package created by the Vermont team as a result of the information discovered through the research findings.

As the project was behind schedule, only six trainee teachers were invited to take part. They were selected on the basis of there being at least two from any one site so they could work together in three teams of two.

The training program was in two parts. The first session was from 8:00 to 12:00, August 21 - 25, 1978. The second session (for follow-up and discussion of classroom application and observations, and guest presentations) was scheduled for two hours weekly from September 11 - October 6, 1978. Three graduate credits were offered.

The objectives of the training program were: to familiarize participants with the team's research and the varieties examined to the point that they could act as observers; to train participants in ethnographic observation and recording skills and have them practice such skills in three occasions; to have participants discuss their observations; to help participants monitor their own moods and SIB's; to familiarize participants with a variety of research methods.

Description of Activities

Summer Session

Day one included a review of the research project, a discussion of the teacher selection processes, and an introduction to the types of data collected and the protocols. Day two provided a description of the data analysis, plans for dissemination of the research findings, and definitions of mood and SIB's. Participants studied protocols and attempted to identify variables themselves. The next three days were spent training participants in the collection of ethnographic data to the point where they attended real-life situations on campus and recorded observations. On the last day of the summer session, feedback from these observations revealed that they had developed a functional level of ethnographic skills.

Fall Session

One class was held at each of the three schools, and two final classes at the University of Vermont. The first class was a presentation by VIP teachers entitled Conflict Resolution Techniques in Monitoring Mood and Adjusting Supportive Instructional Behaviors. The second class was devoted to analysis of the participants' own classroom protocols. Classes three and four were divided into two one-hour blocks. The first hour was spent discussing the most recent protocols, and the second hour was devoted to presentations from VIP teachers with the most interesting data. The final class was also in two parts. The first hour was given to verbal and written evaluation of the training program, and the second hour was used for presentation of various kinds of research. Problems raised by participants were discussed.

Evaluation

Overall rating of the total training program was high. Rating scale results provided an overall average rating of eight on a nine-point scale. The majority of participants reported that they believed they had acquired expected objectives and mostly felt positive about the teaching/learning experiences. The VIP staff, however, did not find the richness of data in the fall protocols that they had hoped for. When asked if they would recommend the training course to other teachers, five said yes and one said no, because the time commitment was too great.

The VIP team concluded, at the end of the project, that they had gained a great deal from the process of interactive research and development, and that they felt more confident in their ability to conduct future research and development projects.

REFERENCES

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Appendix C

AUDIO-RECORDINGS OF TEAM MEETINGS PARTICIPANT LOG INSTRUCTIONS

PERSONAL CONTACT REPORT

PROBLEM IDENTIFICATION QUESTIONNAIRE

ORIENTATION QUESTIONNAIRE

PROFESSIONAL DEVELOPMENT QUESTIONNAIRE

BELIEFS ABOUT TEACHING/LEARNING QUESTIONNAIRE

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

EXPERT COUNTERPART QUESTIONNAIRE

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

During the course of this year's implementation of IR&DT, we want to gather as much information as we can about the process and about how it relates to you and to your schools and colleagues. Because of this "need to know and understand," we've put together these materials to help you and us get information systematically.

The basic evaluation materials are:

1. A looseleaf notebook in the form of a log (notebook to be sent to you).
2. Telephone/communication pads to record communication about the project.
3. Instructions for tape recording team meetings.
4. Instructions for tape recording log entries.
5. Envelopes for returning tapes to Far West Laboratory (to be sent to you).
6. Envelopes for sending written materials to Far West Laboratory (logs, telephone/communications, notes).
7. A casette recorder (to be sent to you).
8. Blank casette tapes (to be sent to you).

The materials are meant to be efficient and systematic. If, however, during the project you believe a better system can be developed to maintain contact with Far West Laboratory, let us know.

In addition to these materials, you will be sent questionnaires from time to time. The responses to these questionnaires will, in addition to the materials herein, help us to better understand the process of IR&DT. We will try to keep these questionnaires to a minimum and will also try to make sure that they are clear, understandable, and reasonable in their demands upon your time and energy. If they are not, please let us know your reactions--perhaps in your log entries or in a note.

As we go through the materials you send us we will be looking/listening to see if there's anything we want to tell you in response. We hope to use the materials as assistance to you as well as ways to understand what it is our work together is all about.

CONTINUED...

1855 FOLSOM STREET • SAN FRANCISCO, CALIFORNIA 94103 • (415) 565-3000

AUDIO-RECORDINGS OF TEAM MEETINGS
PARTICIPANT LOG INSTRUCTIONS

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

Instructions for Taping Team Meetings

1. Be sure that one person has responsibility for taping the meetings. (This need not be the same person each time.)
2. Check to make sure that recorder is operating properly.
3. Check to make sure that sufficient blank tapes are available.
4. Tape entire meeting.
5. During the first part of the meeting, use your own name when you speak for the first few comments you make. ("This is Gary, regarding your suggestion that I say my own name, I think...")
6. As frequently as is comfortable for you, refer to the person whom you are addressing by name. ("Well, Gary I tend to agree with...)
7. Record the date, time, duration of the meeting on the label provided with each tape.
8. Mail the tapes, immediately after the meeting, in one of the padded envelopes provided for that purpose.
9. If the machine broke or some other calamity occured with the tape recording process, write a short note to explain and/or let us know where the tapes may be blank. ("We didn't realize that the tape has run out; that's why there is about a twenty-minute segment missing in tape #2.")

CONTINUED...

AUDIO-RECORDINGS OF TEAM MEETINGS
PARTICIPANT LOG INSTRUCTIONS

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

Instructions for Using Log

The purpose of the log is to find out what is going on regarding the team's activities. This purpose will be served if you tell us what events occur and what your personal reaction is to those events. It will also tell us when certain events occur as you work together.

By events, we mean anything that relates, even minimally, to the team and its work. For instance, events might include the following:

- -The principal asked why I wasn't in my classroom for an hour this morning. I replied that I was observing in __________'s room.

- -________dropped by to tell me that the observation went very well in her class. I said that I hoped it would in mine, too.

- -I read an article in TEACHER magazine that I think _________ would be interested--think I'll send it on.

- -Ms. ___________,at X School, called today and asked if she could borrow the materials we're using in the project. I told her I'd send her the manual for use but couldn't send the rest until the team had finished with it.

- -I'm exhausted. The meeting went over two hours today and I'm mad as I can be at ________for talking so much about that problem with the tape recorder.

As you can see from the above, event is a broad term here. We want you to tell us what happens as it relates to the project.

Further, when you wish to or when it appears necessary to you, we'd like to get your reactions to what happens. For instance, these reactions might fit the events noted above.

- -I already told him I'd be out--he, in fact, arranged for the coverage. Can't seem to keep the communication straight with him.

- -I'm glad that ______had a good experience -- makes me less anxious about next week in my room.

CONTINUED...

AUDIO-RECORDINGS OF TEAM MEETINGS
PARTICIPANT LOG INSTRUCTIONS

-Maybe by sending this article I can get him to take my concerns seriously.

-Glad Ms. ______ wanted the materials. Wish we could get some additional sets in case the needs come up again.

-Probably shouldn't be so mad but it seems that ________ does take up too much time with procedural stuff.

So, what we have is a set of "events" and a set of "personal reactions" to them. It should be reiterated that the reactions are up to you--include them when you wish or when it appears necessary to make an explanation.

Each event should be dated. A space is provided in the left-hand column for providing the data.

Record each event as soon as you can after it occurs.

It isn't necessary to record events that are part of taped team meetings. We would, however, like your personal reactions to the meetings either in their entirety or to bits and pieces of them.

MAIL THE CARBON (YELLOW PAGE) OF YOUR LOG IN THE ENVELOPES PROVIDED AT THREE-WEEK (OR THEREABOUTS) INTERVALS.

BE SURE TO WRITE LEGIBLY AND FIRMLY. IT ISN'T NECESSARY TO MAKE THESE LITERARY MASTERPIECES. THEY ARE RECORDS ONLY AND WILL BE TREATED AS SUCH.

MAIL/TELEPHONE/COMMUNICATION SHEETS WITH THE LOG PAGES.

CONTINUED...

AUDIO-RECORDINGS OF TEAM MEETINGS
PARTICIPANT LOG INSTRUCTIONS

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

Instructions for Using Tape Recorder as Log

1. State your name at beginning of tape, checking to be sure that recorder is working properly.

2. Use the same format as the log. That is, say into the recorder, "On August 27th I happened to meet Ms.______ who asked me if she could borrow the materials on classroom management that we're working with. I told her I'd send them in the afternoon mail. My personal reaction is that I'm delighted to share but wish that we had more sets in case anyone else wants them."

   You will note the date, the event, and the personal reaction are included.

3. If you wish, use the tape recorder for reporting reactions to the team meetings but be sure that you say that's what you're doing.

4. Mail the tapes at the same three-week intervals as you would with the written logs.

5. Feel free to mix and match. That is, if it's convenient to write in the log at some times or tapes at other times, go ahead and do it that way. Just be sure that the dates are mentioned--we can sort them together. (If you think of it, you might want to make such a note when you send things. "I taped some responses and wrote in the log at other times. I think the taped materials come about October 3rd.")

6. Mail telephone/communication sheets with the log tapes.

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

PERSONAL CONTACT REPORT

NAME________________________________ DATE____________________

NATURE OF CONTACT

____Attached Correspondence ____Telephone Call to________________

____Other Communication________________ ____Telephone Call from________________
(specify)

* *

COMMENTS | PERSONAL REACTION

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

PERSONAL CONTACT REPORT

NAME________________________________ DATE____________________

NATURE OF CONTACT

____Attached Correspondence ____Telephone Call to________________

____Other Communication________________ ____Telephone Call from________________
(specify)

* *

COMMENTS | PERSONAL REACTION

PROBLEM IDENTIFICATION QUESTIONNAIRE

NAME ______________________________

FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

Interactive Research and Development in Teaching

In the spaces provided below, please list five major problems you see facing teachers (and teaching) today. After each problem you list, check the space which indicates what percentage of your peers would agree with you that this *is* a major problem even though they may disagree with you about how to handle it. (By peers, we mean persons who have your same professional role and are in your general geographic region.)

Problem	Less than 25%	25%-50%	50%-75%	Over 75%
1.				
2.				
3.				
4.				
5.				

ORIENTATION QUESTIONNAIRE

NAME ____________________________

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT IN TEACHING

California Orientation -- August 23-26

You have experienced a variety of opportunities to learn about IR&DT and one another during the past three days. Please indicate your reactions to the following in terms of general statements of what you have learned and how satisfied you were with each

EXPLANATION OF IR&DT:

What I learned:

How satisfied I am with the experience:

PRESENTATION OF RESEARCH STEPS:

What I learned:

How satisfied I am with the experience:

ANALYSIS OF RESEARCH REPORTS:

What I learned:

How satisfied I am with the experience:

INFORMAL MEETINGS WITH TEAM MEMBERS AND FAR WEST STAFF:

What I learned:

How satisfied I am with the experience:

CONTINUED...

ORIENTATION QUESTIONNAIRE

TEAM DISCUSSION OF ROLES AND RESPONSIBILITIES:

What I learned:

How satisfied I am with the experience:

TEAM MEETINGS IN GENERAL:

What I learned:

How satisfied I am with the experience:

ENACTMENT OF EVALUATION/STUDY PROCEDURES (QUESTIONNAIRES, TAPING MEETINGS, USE OF STUDY MATERIALS SUCH AS LOGS, ETC.):

What I learned:

How satisfied I am with the experience:

THERE HAS BEEN CONSIDERABLE DISCUSSION OF ROLES AND RESPONSIBILITIES OF TEAM MEMBERS. REGARDING THIS ISSUE, PLEASE RESPOND TO THE FOLLOWING:

As a ________________, I believe that my role on the IR&DT team is to

Regarding others on the team, I believe that the ________________ will contribute the following:

I believe that the ____________________ will contribute the following:

CONTINUED...

ORIENTATION QUESTIONNAIRE

If I had the opportunity to tell my fellow team members anything that I think would help our future work together, I would tell them the following:

I believe that the Far West staff can help our work together best by doing the following:

As of this date (August 26, 1977), I believe that the IR&DT team can make the following contributions to:

My own professional growth:

Teaching and teachers generally:

My own workplace:

As of this date (August 26, 1977), I can see the following as potential problems we will face together:

I believe that my strengths and weaknesses regarding team membership are:

PROFESSIONAL DEVELOPMENT QUESTIONNAIRE

Name________________________

FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

Interactive Research and Developing in Teaching

The following items represent pedagogical, organizational, and content areas that might be seen as possible subjects for teacher education, either preservice or inservice. We are interested to know (1) what your own interest is in each of these areas, and (2) how interesting you believe that teachers generally perceive them as being.

Indicate your level of interest in having a satisfactory opportunity to learn more about each of the following by checking one of the three spaces to the left of the item. Indicate the level of interest you believe is held by teachers generally by checking one of the spaces to the right of the item.

YOUR OWN INTEREST LEVEL				TEACHERS' IN GENERAL INTEREST LEVEL		
VERY Interested	SOME-WHAT Interested	NOT Interested		VERY Interested	SOME-WHAT Interested	NOT Interested
____	____	____	The ways students learn (e.g., learning styles, motivation, reinforcement, retention)	____	____	____
____	____	____	Reading	____	____	____
____	____	____	Language	____	____	____
____	____	____	Mathematics	____	____	____
____	____	____	Science	____	____	____
____	____	____	Social Studies	____	____	____
____	____	____	The performing arts (e.g., drama, music)	____	____	____
____	____	____	The fine arts	____	____	____
____	____	____	Bilingual and/or multicultural education	____	____	____
____	____	____	Classroom management	____	____	____
____	____	____	Diagnosing weaknesses and prescribing instruction	____	____	____

CONTINUED...

PROFESSIONAL DEVELOPMENT QUESTIONNAIRE

YOUR OWN INTEREST LEVEL				TEACHERS' IN GENERAL INTEREST LEVEL		
VERY Interested	SOME-WHAT Interested	NOT Interested		VERY Interested	SOME-WHAT Interested	NOT Interested
____	____	____	Structuring learning experiences	____	____	____
____	____	____	Values clarification (helping students clarify their own values)	____	____	____
____	____	____	Students teaching students	____	____	____
____	____	____	Teacher-student interaction	____	____	____
____	____	____	Evaluating student learning	____	____	____
____	____	____	Motivating students	____	____	____
____	____	____	Team teaching	____	____	____
____	____	____	Open classrooms	____	____	____
____	____	____	Nongrading	____	____	____
____	____	____	Year-round school	____	____	____
____	____	____	Teacher-prepared materials	____	____	____
____	____	____	New curricula	____	____	____
____	____	____	Programmed instruction	____	____	____
____	____	____	Technology (use of TV, radio, etc.)	____	____	____

Using the same method of responding, please indicate your own and your impressions of teachers' in general interests in the following types of activities for inservice education programs.

VERY Interested	SOME-WHAT Interested	NOT Interested		VERY Interested	SOME-WHAT Interested	NOT Interested
____	____	____	Exchange of ideas with colleagues	____	____	____
____	____	____	Demonstration lessons taught by other teachers	____	____	____
____	____	____	Visits to successful programs	____	____	____
____	____	____	Programmed instruction	____	____	____

CONTINUED...

PROFESSIONAL DEVELOPMENT QUESTIONNAIRE

YOUR OWN INTEREST LEVEL				TEACHERS' IN GENERAL INTEREST LEVEL		
VERY Interested	SOMEWHAT Interested	NOT Interested		VERY Interested	SOMEWHAT Interested	NOT Interested
____	____	____	Workshops with high participant involvement	____	____	____
____	____	____	Series of presentations by knowledgeable people	____	____	____
____	____	____	Study at a college or university, either degree or nondegree	____	____	____
____	____	____	Attendance at professional conferences or conventions	____	____	____
____	____	____	Sabbatical leave	____	____	____
____	____	____	Student feedback and evaluation	____	____	____
____	____	____	Analysis of videotaped teaching units	____	____	____
____	____	____	Independent study or research, including self-analysis of teaching effectiveness	____	____	____
____	____	____	Exchange roles (e.g., with counselors, librarians)	____	____	_

BELIEFS ABOUT TEACHING/LEARNING QUESTIONNAIRE

NAME____________________

FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

Interactive Research and Development in Teaching

The row of spaces opposite each item below represents a range of responses from strongly agree to strongly disagree. Please place an X in the space opposite each item that best indicates your degree of agreement or disagreement with the statement presented. Check only one response opposite each item.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. Good teacher-pupil relations are enhanced when it is clear that the teacher, not the pupils, is in charge of classroom activities.	____	____	____	____	____
2. As long as they have control over teaching in their own classrooms, it is not necessary for teachers to have a voice in school-wide affairs.	____	____	____	____	____
3. The learning of basic facts is less important in schooling than acquiring the ability to synthesize facts and ideas into a broader perspective.	____	____	____	____	____
4. Learning is enhanced when teachers praise generously the accomplishments of individual pupils.	____	____	____	____	____
5. There is too great an emphasis on keeping order in most classrooms.	____	____	____	____	____
6. Learning in the elementary school is essentially a process of increasing one's store of information about the various basic fields of knowledge.	____	____	____	____	____

CONTINUED...

BELIEFS ABOUT TEACHING/LEARNING QUESTIONNAIRE

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
7. The best learning atmosphere is created when the teacher takes an active interest in the problems and affairs of students.	____	____	____	____	____
8. An orderly classroom is the major prerequisite to effective learning.	____	____	____	____	____
9. Effective learning depends primarily upon the use of adequate instructional techniques and resources.	____	____	____	____	____
10. Pupil initiation and participation in planning classroom activities are essential to the maintenance of an effective classroom atmosphere.	____	____	____	____	____
11. Pupils must be kept busy or they soon get into trouble.	____	____	____	____	____
12. When pupils are allowed to participate in the choice of activities, discipline problems are generally averted.	____	____	____	____	____
13. When given a choice of activities, most pupils select what is best for them.	____	____	____	____	____
14. In planning their work, teachers should rely heavily on the knowledge and skills pupils have acquired outside the classroom.	____	____	____	____	____
15. Pupil motivation is greatest when pupils can gauge their own progress rather than depending on regular evaluation by the teacher.	____	____	____	____	____
16. Children need and should have more supervision than they usually get.	____	____	____	____	____

CONTINUED...

BELIEFS ABOUT TEACHING/LEARNING QUESTIONNAIRE

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
17. Before pupils are encouraged to exercise independent thought they should be thoroughly grounded in facts and knowledge about basic subjects.	____	____	____	____	____
18. In the interest of good discipline, pupils who repeatedly disrupt the class must be firmly punished.	____	____	____	____	____
19. Teaching of basic skills and subject matter is the most important function of the school.	____	____	____	____	____
20. Proper control of a class is amply demonstrated when the pupils work quietly while the teacher is out of the room.	____	____	____	____	____
21. Pupils are motivated to do better work when they feel free to move around the room while class is in session.	____	____	____	____	____

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

Interactive Research and Development in Teaching

Name ______________________________

The purpose of this questionnaire is to find out how skilled you believe you are in carrying out research and development in teaching. The items that follow are ones that list many of the skills and understandings believed to be related to effective research, development, and teaching. Indicate how proficient you believe yourself to be by circling the appropriate number as in the example below.

Sometimes we are familiar with a technique or body of knowledge even though we are not skilled in the use of the technique or knowledge. When you indicate "no skill" by circling response 1, indicate that you are familiar with the content of the item by placing an X on the line preceding the item. (Do not indicate familiarity for items in which you believe you are skillful or somewhat skillful.)

EXAMPLE

Highly Skilled	Somewhat Skilled	No Skill		
3	2	[✓ 1]	X	Ability to translate a teaching concern into a researchable question.

The person who responded to this example believes himself/herself to have no skill when it comes to stating a teaching concern as a research question although (s)he is familiar with the issue.

For each of the items that follow, please indicate how skilled you believe yourself to be regarding the content of the items. As in the example above, circle the number of the skill level which is appropriate. When you believe yourself to have "no skill," place an X on the line if you are familiar with the content of the item.

Highly Skilled	Somewhat Skilled	No Skill			
3	2	1	____	Ability to use editorial skills on one's own writing or that of others.	(1)
3	2	1	____	Ability to write in a style and at a level appropriate to a specified audience.	(2)
3	2	1	____	Ability to determine the evaluative questions which must be asked in an evaluation and the information which must be gathered to answer those questions.	(3)

CONTINUED...

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

Highly Skilled	Somewhat Skilled	No Skill			
3	2	1	_____	Ability to diagnose an individual student's status in attainment of the basic skills.	(4)
3	2	1	_____	Ability to help persons responsible for educational activities or institutions identify and articulate the objectives of the activity or institution.	(5)
3	2	1	_____	Ability to apply knowledge of individual students' abilities to the formulation of a program of instruction.	(6)
3	2	1	_____	Ability to identify and articulate an evaluation problem.	(7)
3	2	1	_____	Ability to plan an instructional sequence for a small group of students (4-8) in social studies.	(8)
3	2	1	_____	Ability to design and conduct interviews for the purpose of collecting data.	(9)
3	2	1	_____	Ability to plan data collection procedures appropriate to a research or evaluation activity.	(10)
3	2	1	_____	Knowledge of measurement theory and techniques.	(11)
3	2	1	_____	Ability to coordinate several instructional units for use by groups of students at about the same time.	(12)
3	2	1	_____	Knowledge of specific questionnaire construction techniques.	(13)
3	2	1	_____	Ability to individualize instruction.	(14)
3	2	1	_____	Ability to construct instruments to assess attitudes and other affective variables.	(15)
3	2	1	_____	Ability to select appropriate standardized tests or instruments.	(16)
3	2	1	_____	Ability to write unambiguous items in vocabulary appropriate to the audience.	(17)

CONTINUED...

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

Highly Skilled	Somewhat Skilled	No Skill			
3	2	1	_____	Ability to prepare instructional materials appropriate to a student's developmental level.	(18)
3	2	1	_____	Ability to conduct item analyses, including computation of difficulty and discrimination indices.	(19)
3	2	1	_____	Knowledge of general principles of research design.	(20)
3	2	1	_____	Knowledge of specific experimental and quasi-experimental designs.	(21)
3	2	1	_____	Knowledge of factors which jeopardize internal and external validity.	(22)
3	2	1	_____	Ability to operationalize a research design into specific research procedures.	(23)
3	2	1	_____	Ability to analyze critically your own teaching behavior.	(24)
3	2	1	_____	Knowledge of sampling theory and techniques.	(25)
3	2	1	_____	Knowledge of at least one major theory of learning.	(26)
3	2	1	_____	Ability to identify and articulate a researchable problem.	(27)
3	2	1	_____	Ability to formulate testable hypotheses or researchable questions.	(28)
3	2	1	_____	Knowledge of procedures and steps in developing curriculum materials.	(29)
3	2	1	_____	Knowledge of at least one curriculum planning model.	(30)
3	2	1	_____	Ability to state objectives in measurable terms.	(31)
3	2	1	_____	Knowledge of various instructional approaches that might be incorporated into curriculum materials.	(32)
3	2	1	_____	Ability to record classroom events accurately and objectively.	(33)

CONTINUED...

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

Highly Skilled	Somewhat Skilled	No Skill		
3	2	1	_____Ability to determine relations between teacher behavior and student behavior.	(34)
3	2	1	_____Ability to identify bias and/or prejudice in written reports of classroom events.	(35)
3	2	1	_____Knowledge of various formal and informal systems of recording observations of behavior (e.g., Interaction Analysis).	(36)
3	2	1	_____Ability to use formal or informal systems of recording observations of behavior.	(37)
3	2	1	_____Ability to choose appropriate statistical techniques for data analysis.	(38)
3	2	1	_____Knowledge of descriptive statistical techniques (e.g., means, standard deviation).	(39)
3	2	1	_____Ability to identify patterns of teaching behavior from a transcript of teacher-student talk.	(40)
3	2	1	_____Knowledge of correlational techniques.	(41)
3	2	1	_____Knowledge of statistical regression techniques.	(42)
3	2	1	_____Knowledge of t-tests and critical ratios.	(43)
3	2	1	_____Knowledge of instrument reliability, including types of reliability coefficients.	(44)
3	2	1	_____Knowledge of instrument validity, including various approaches to determining validity.	(45)
3	2	1	_____Ability to generalize from a set of discrete statements or conclusions.	(46)
3	2	1	_____Knowledge of alternate methods of presenting data (e.g., graphs, tables).	(47)
3	2	1	_____Ability to use standardized ("canned") computer programs (e.g., SPSS).	(48)
3	2	1	_____Ability to distinguish between a classroom problem and a symptom of that problem.	(49)

CONTINUED...

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

Highly Skilled	Somewhat Skilled	No Skill		
3	2	1	_____Ability to read and interpret computer output.	(50)
3	2	1	_____Ability to lead group discussions, moderate meetings, or facilitate constructive interactions among personnel.	(51)
3	2	1	_____Ability to use library research techniques (e.g., indices to periodicals).	(52)
3	2	1	_____Ability to use ERIC or other information retrieval systems.	(53)
3	2	1	_____Knowledge of techniques for assessing student achievement in relation to behavioral outcomes.	(54)
3	2	1	_____Knowledge of systems developed to categorize human behavior or abilities (e.g., Bloom's taxonomy).	(55)
3	2	1	_____Ability to plan an effective development program or project.	(56)
3	2	1	_____Ability to sequence learning activities to facilitate student learning in curriculum or set of curriculum materials.	(57)
3	2	1	_____Ability to use field-testing techniques during preliminary tryout or implementation of new curriculum materials.	(58)
3	2	1	_____Ability to develop appropriate product specifications for new educational products.	(59)
3	2	1	_____Ability to critique a written or oral presentation.	(60)
3	2	1	_____Ability to interpret and integrate statistical data into a meaningful presentation.	(61)
3	2	1	_____Ability to organize and classify information into meaningful categories.	(62)
3	2	1	_____Ability to make a distinction between an objective observation and a personal reaction reaction to what is observed.	(63)

CONTINUED...

RESEARCH-TEACHING-DEVELOPMENT SKILLS QUESTIONNAIRE

Highly Skilled	Somewhat Skilled	No Skill			
3	2	1	_____	Ability to communicate orally in a clear and effective manner.	(64)
3	2	1	_____	Knowledge of techniques of classroom observation.	(65)
3	2	1	_____	Ability to use anthropological and/or sociological data collection techniques.	(66)

EXPERT COUNTERPART QUESTIONNAIRE

FAR WEST LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

INTERACTIVE RESEARCH AND DEVELOPMENT ON TEACHING

Your Name ____

Title ____

Institution ____

Address ____

____

Title of Research Report ____

The purpose of this questionnaire is to elicit your judgment regarding the research report which accompanies it. The items which follow are designed to determine the degree to which the research reported demonstrates the appropriate rigorous conduct and whether you believe the research process and product can be said to be useful.

Please read the research report in its entirety before responding to the questionnaire items. If you wish to make comments regarding the report which are not covered by the questionnaire items, please do so on the last page of the instrument. Also, because some of the items are closely related, you may wish to read the entire questionnaire before beginning to respond.

You will notice that the questionnaire is printed on two-page self-carbon paper. Please use a ball point pen, pressing firmly on each two-page set placed on a hard surface. When you complete the questionnaire, forward the white pages to Far West Laboratory in the envelope provided in this package. You may retain the yellow second pages for your records.

Thank you for your willingness to assist us in this effort.

CONTINUED...

EXPERT COUNTERPART QUESTIONNAIRE

INTERACTIVE RESEARCH AND DEVELOPMENT ON TEACHING

Your Name ____________________________________

Title of Research Report ____

Please respond to each item, circling the response which most clearly represents your judgment. You will note that the responses and their interpretations are as follows:

1	2	3	4	5	NB
Strongly Agree	Agree	Agree with Reservations	Disagree	Disagree Strongly	No Basis for Judgment

1. The study reported uses appropriate theory. 1 2 3 4 5 NB

2. The theory cited is accurately interpreted. 1 2 3 4 5 NB

3. Prior related research is reported. 1 2 3 4 5 NB

4. Prior related research is supportive of the need for the study. 1 2 3 4 5 NB

5. In general, the literature (theory, research, proposition) is directly related to the study's purposes. 1 2 3 4 5 NB

6. In general, the literature (theory, research, proposition) is directly related to the study's procedures. 1 2 3 4 5 NB

7. The purpose(s) of the study is (are) clear and understandable. 1 2 3 4 5 NB

8. The literature cited, purpose of the study, and procedures used are directly and logically related. 1 2 3 4 5 NB

9. The research procedures used are appropriate to achieve the purpose(s) of the study. 1 2 3 4 5 NB

10. The procedures used are described clearly and adequately. 1 2 3 4 5 NB

11. The nature of the sample population is appropriate to the purpose(s) of the study. 1 2 3 4 5 NB

12. The size of the sample is reasonable, given the nature of the study and the constraints upon the research team. 1 2 3 4 5 NB

(R/1)

CONTINUED...

EXPERT COUNTERPART QUESTIONNAIRE

Your Name ____________________________________

Title of Research Report ____

13. The data collection procedures are appropriate to the purpose(s) of the study. 1 2 3 4 5 NB

14. The data collection procedures are reported clearly. 1 2 3 4 5 NB

15. The data collection procedures were accurately implemented. 1 2 3 4 5 NB

16. The analyses of data are appropriate to the purpose(s) of the study. 1 2 3 4 5 NB

17. The analyses of data are explained clearly. 1 2 3 4 5 NB

18. The analyses of the data are logically related to the data collected. 1 2 3 4 5 NB

19. The findings of the study are clearly presented. 1 2 3 4 5 NB

20. The findings of the study are logically related to the purpose(s) of the study. 1 2 3 4 5 NB

21. The findings of the study are credibly related to the analyses of the data. 1 2 3 4 5 NB

22. The organization of the study is logical and clear. 1 2 3 4 5 NB

23. The continuity of the study (purpose, procedures, analyses, findings) is consistent and logical. 1 2 3 4 5 NB

24. The presentation of the study report is clear. 1 2 3 4 5 NB

25. The study report is well written (grammar, syntax, punctuation, etc.). 1 2 3 4 5 NB

26. The study is original/unique in conception. 1 2 3 4 5 NB

27. The study is original/unique in its procedures. 1 2 3 4 5 NB

28. The study is a strong contribution to understanding teaching as an activity. 1 2 3 4 5 NB

29. The study, generally, provides insight into an important aspect of teaching. 1 2 3 4 5 NB

30. The study will be useful to researchers in terms of the procedures involved. 1 2 3 4 5 NB

(R/2)

CONTINUED...

EXPERT COUNTERPART QUESTIONNAIRE

Your Name ______________________________

Title of Research Report ______________________________

31. The findings of the study are potentially useful to the conduct of further research on teaching 1 2 3 4 5 NB

32. I would use the study as a good example of research on teaching. 1 2 3 4 5 NB

33. I would use the study's procedures (intact or slightly modified) in research on teaching if they related to my research intentions. 1 2 3 4 5 NB

34. I would use (or urge others to use) the team approach to research as presented in the study report. 1 2 3 4 5 NB

35. I believe there are more advantages than disadvantages to the team approach to research on teaching as presented in the study report. 1 2 3 4 5 NB

36. The strengths of the research reported in the study are:

____

____

____

____

____

37. The weaknesses of the research reported in the study are:

____

____

____

____

____

(R/3)

CONTINUED...

EXPERT COUNTERPART QUESTIONNAIRE

Your Name____

Title of Research Report____

38. Other comments:

(R/4)

Appendix D

JURY MEMBERS
PANEL OF EXPERTS
SITE EVALUATORS/COUNTERPARTS

JURY MEMBERS

Dr. Roland Barth
Lecturer in Education
Graduate School of Education
Harvard University

Ms. Pat Brown
Elementary Teacher
Indiannapolis Public Schools

Dr. Angeline Caruso
Associate Superintendent
Curriculum and Instruction
City of Chicago

Professor Donald R. Cruickshank
Faculty of Curriculum & Foundation
College of Education
Ohio State University

Martha Dell Sanders
Director
KEA UniServ
Paducah, Kentucky

Ms. Diane Doe
Elementary Teacher
San Francisco Unified
School District

Dr. Tom Bood
Center for Social Behavior
University of Missouri

Dr. Gene Hall
R&D Center for Education
University of Texas at Austin

Dr. Herb Hite
Director, Teacher Corps Project
Western Washington State University

Dr. Ken Howey
School of Education
University of Minnesota

Ms. Patricia Kaye
Graduate School and University Center
City University of New York

Dr. Walter Hathaway
Evaluation Specialist
Portland Public Schools

Ms. Charlette Kennedy

Michigan State University

Dr. Judy Lanier
Associate Dean for
Program Development
College of Education
Michigan State University

Dr. Ann Lieberman
Department of Curriculum & Teaching
Teachers College
Columbia University

Ms. Marilyn Nelson
Director, Career Program
Montgomery (Maryland) Public Schools

Dr. Barbara Prentice
Director
Research and Evaluation
Tucson Unified School District

Dr. Margaret Wang
Unite Director
Learning Research & Development Center
University of Pittsburgh

PANEL OF EXPERTS

Dr. J. Myron Atkin
Dean, College of Education
University of Illinois

Ms. Joan Byrd
Elementary Teacher
Brooklyn, NY

Dr. Mike Keane
Director of Research
Philadelphia Board of Education

Ms. Sally McClure
Elementary Teacher
Washington, D.C.

Dr. Harold Pratt
Science Coordinator
Jefferson County (Colorado) Public Schools

Ms. Pat Smith
Elementary Teacher
Dallas, Oregon

Dr. Jane Stallings
Manager, Classroom Process Studies
Stanford Research Institute

SITE EVALUATORS/COUNTERPARTS

VERMONT

Ms. Nancy Dowd
Elementary Teacher
Winooski, VT

Dr. Edward Fabian
Deputy Commissioner of Education
Department of Education
Montpelier, VT

Dr. Charles Letteri
College of Education
University of Vermont
Burlington, VT

Dr. Ann Nevin
Associate Chairperson
Special Education Area
College of Education &
Social Sciences
University of Vermont

Dr. Frederick Schmidt
Director
Vermont Community Data Bank
University of Vermont

Ms. Jane S. True
Elementary Teacher
Essex Junction, VT

SAN DIEGO

Ms. Marjorie Criag
Program Evaluator
San Diego Unified School District

Ms. LeAnn D. Kelley
Elementary Teacher
San Diego Unified School District

Mr. Richard Richiger
Trainer/Developer
San Diego Unified School District

Dr. Steve Osterlind
Evaluation Services
San Diego Unified School District

Ms. Donna Shields
Elementary Teacher
San Diego Unified School District

Dr. Gerald Treadway
Professor of Education
San Diego State University

Appendix E

NATIONAL ADVISORY PANEL MEMBERS

NATIONAL ADVISORY PANEL MEMBERS

Dr. Walter Doyle
College of Education
North Texas State University

Dr. Carolyn Evertson
Research & Development Center
  for Teacher Education
University of Texas, at Austin

Dr. H. Del Schalock
Research Professor
Teaching Research
Oregon State System of Higher Education

Ms. Carol Trimble
Resource Teacher
Peralta Year-Round School
Oakland, California

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